CURTIS'S

BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;

WITH SUITABLE DESCRIPTIONS;

BY

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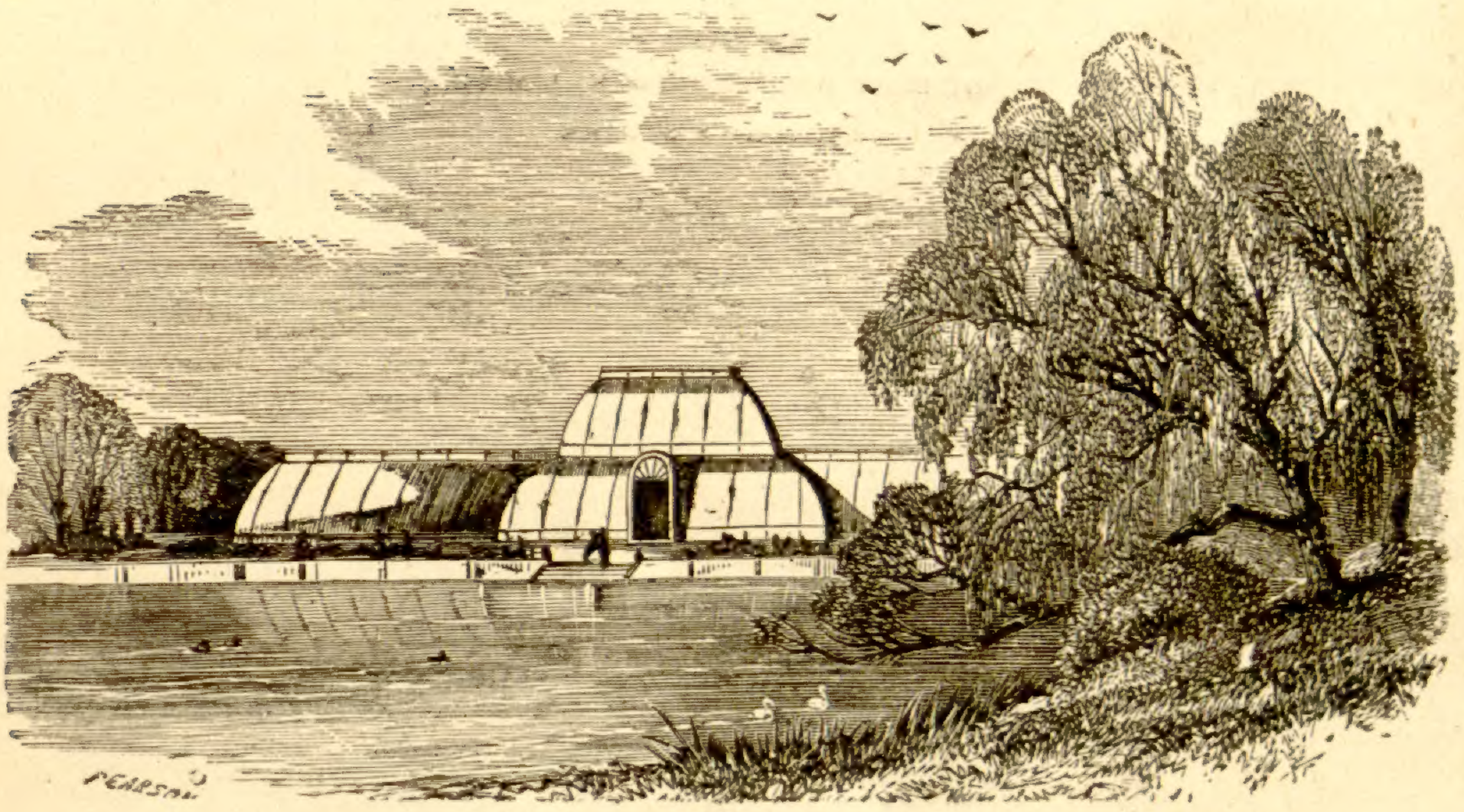
VOL. XLII.
OF THE THIRD SERIES.
(Or Vol. CXII. of the Whole Work.)



"Here may the flowers display their sweets,
And, gay, their silken leaves unfold,
As fearless of the noontide heats
As careless of the winter's cold."

LONDON:
L. REEVE & CO., 5, HENRIETTA STREET, COVENT GARDEN.
1886.

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Mo. Bot. Garden,
1897.

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TO

SIR TREVOR LAWRENCE, BART., M.P.,

PRESIDENT OF THE ROYAL HORTICULTURAL SOCIETY.

DEAR SIR TREVOR LAWRENCE,

Allow me on this, the hundredth anniversary of the BOTANICAL MAGAZINE, to dedicate to you, as President of the Royal Horticultural Society, the volume that is the evidence of this work having attained a longevity far exceeding that of any other Illustrated Botanical or Horticultural Serial.

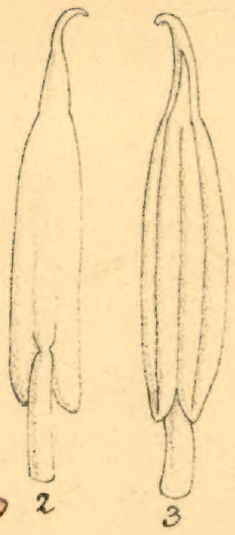
And whilst thus commemorating your services to Horticulture, I would associate with your name that of the Lady from whom you directly inherit your love of plants and passion for gardening—the late Mrs. Lawrence, of Ealing Park, whose liberality and whose rich and beautiful conservatories were set forth by my predecessor in the dedication to her of the 68th volume (published in 1842) of this work, and whose kindness to myself when a very young Botanist I shall ever hold in grateful remembrance.

Believe me, dear Sir Trevor Lawrence,

Faithfully yours,

JOS. D. HOOKER.

THE CAMP, SUNNINGDALE,
December 1*st*, 1886.



M.S. del. J.N. Fitch lith.

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TAB. 6853.

IXORA MACROTHYRSA.

Native of the Malay Archipelago.

Nat. Ord. RUBIACEÆ.—Tribe IXOREÆ.

Genus IXORA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 113.)

IXORA *macrothyrsa*; frutex glaberrimus, ramulis teretibus, foliis breviter petiolatis lanceolatis v. oblongo-lanceolatis acuminatis undulatis basi acutis subcoriaceis, stipulis interpetiolaribus ad medium connatis brevibus latissimis mucronatis, thyrsis maximis subglobosis densifloris floribus confertissimis coccineis, calyce brevissime obtuse 4-lobo, corollæ tubo sesquipollicari lobis ½-pollicaribus lanceolatis, stylis exsertis, bacca pisiformi.

I. macrothyrsa, *Teysm. et Binn. in Herb.*; *Masters in Gard. Chron.* N.S. xxii. (1884), p. 267.

I. Duffii, *T. Moore in Flor. et Pomol.* 1878, p. 76; *cum Ic. xylog.*

PAVETTA macrothyrsa, *Teysm. et Binn. in Bat. Natuur. Tijdsche*, vol. xxix. (1867), p. 247 ?

Of all the species of the large genus *Ixora*, of which upwards of one hundred are enumerated, this is certainly the most imposing, whether for habit, size or colour. It would appear to be a widely diffused plant in the Malayan Archipelago. It was first described as a native of the province of Manado in Celebes, where it was discovered by M. Teysmann, and an authentic specimen of it is preserved in the Kew Herbarium, presented by the late D. Hanbury, who received it from M. Binnendyk. Another specimen is from the Island of Sumatra, sent by Teysmann to Dr. Hance, and by him to Kew; the species is, however, not mentioned by Miquel in the supplementary volume of his "Flora van Nederland. Ind.," which is devoted to the plants of Sumatra. The only other known habitat is that of the specimen here figured, which was procured in Ualan or Strong Island, one of the Caroline group, by Mr. Duff, an employé of the Sydney Botanical Gardens.

The specimen here figured flowered in the Royal Gardens in September, 1883; the plant was presented by Messrs. Veitch. It may be referable to the var. *nitida* of Teysm. and Binnend. *l. c.*, the only characters of which are that

the thyrse is more dense, the leaves more narrowed at each end and shining above, and the stipules with a longer point, matters rather of individual than varietal value in the genus. The same authors describe the flower as orange-coloured at first, and then atrosanguineous; those of the plant cultivated at Kew are of a pure bright scarlet.

Descr. A shrub, everywhere quite glabrous, with stiff terete branches. *Leaves* about a foot long by one and a half to two inches broad, shortly petioled, linear-oblong to oblong-lanceolate, usually acuminate, undulate, base attenuate, bright green above, paler beneath, base often unequal; nerves very variable in number and direction, eleven to eighteen pair, spreading or ascending, arched or nearly straight; petiole very stout, one-half to three-quarters of an inch long; stipules short, much broader than long, mucronate, connate to or beyond the middle. *Thyrse* subsessile, globose or nearly so, eight inches in diameter; flowers innumerable, hiding the ramifications, scarlet, shortly pedicelled, pedicel jointed above the minute opposite bracts. *Calyx* minute, short, shortly and obtusely four-lobed. *Corolla-tube* one and a half inch long, very slender, not enlarged below the limb; lobes nearly half an inch long, lanceolate, obtuse. *Anthers* long, connective acuminate. *Style* exserted, with two short recurved lobes.—*J. D. H.*

Fig. 1, Calyx; 2 and 3, front and back view of anthers; 4, apex of style and stigmas:—*all enlarged.*

M.S. del. J.N. Fitch lith.

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TAB. 6854.

MARTINEZIA CARYOTÆFOLIA.

Native of Tropical South America.

Nat. Ord. PALMEÆ.—Tribe COCOINEÆ.

Genus MARTINEZIA, *Ruiz et Pav.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 944.)

MARTINEZIA *caryotæfolia*; caudice gracili 20–30-pedali creberrime annulato, annulis aculeis elongatis nigris horridis, foliis pinnatis pinnis aggregatis e basi lata elongato-cuneatis truncatis apice sub-3-lobis erosisque utrinque viridibus glabris, lobis marginalibus interdum longe productis, petiolo rachique aculeatis aculeis gracillimis, spatha elongato-clavata aculeata, spadice pedali laxe paniculatim ramosa ramis elongatis, bracteis ad basin ramorum parvis e basi lata lanceolatis, drupis globosis.

M. caryotæfolia, *Humb. Bonpl. et Kunth, Nov. Gen. et Sp.* vol. i. p. 305, and vol. vii. tab. 699; *Kunth Enum.* vol. iii. p. 270; *Mart. Hist. Nat. Palm.* vol. iii. pp. 284 and 322, tab. 161, fig. 1; and *Palm. Orbign.* p. 76; *Drude in Mart. Fl. Bras., Palm.* 394, tab. 85.

A handsome small Palm, belonging to a genus of which fourteen species have been enumerated, all natives of tropical America, where they inhabit hot valleys and river banks. As may well be supposed from a glance at the plate here given, they are plants not easily collected and preserved for scientific purposes, and it is consequently not possible to define with accuracy the geographical limits of the species. *M. caryotæfolia* is the first known, and is undoubtedly a native of New Granada, and is stated to inhabit equatorial Brazil, Peru and Guiana. Five species of the genus are cultivated at Kew, but no other has hitherto flowered.

M. caryotæfolia has been cultivated for many years in the Royal Gardens, having been raised from seed imported from New Granada, and collected by Purdie in 1845, when he was travelling in the service of the Gardens in that country. The plant is now about twelve feet high, and flowers in May.

DESCR. A small graceful Palm, attaining thirty feet in height. *Stem* cylindric, strict, erect, slightly swollen at the base, where it roots above the soil, closely ringed;

rings loaded with stiff black straight slender spines two to three inches long, which when young are flattened and silkily villous. *Leaves* four to five feet long, terminal, bright green, paler beneath, spreading and drooping; petiole and rachis armed with scattered very slender spines; pinnæ eight to ten pairs, nine to twelve inches long by three to four broad, inserted by a broad base on the trigonous mealy or scurfy rachis, elongate-cuneate, truncate, more or less three-lobed at the apex, which is further lobulate and erose; sides usually produced into acuminate drooping laciniæ one to two inches long, plicately many-nerved, midrib distinct; petiole one to two feet long, with an open basal sheath. *Spathe* a foot long, elongate-clavate, aculeate. *Spadix* very long-peduncled, glabrous or nearly so, loosely branched; branches green, slender; bracts at their bases half an inch long, lanceolate from a broad base, membranous, appressed to the branch; bracteoles very short, semi-linear, brown; flowers sessile, yellow-green, rather distant, one-sixth of an inch long; males most numerous, females at the lower part of the branches. MALE FLOWER. *Calyx* short, three-lobed. *Petals* three, ovate, subacute, valvate. *Stamens* six, included, filaments short; anthers linear-oblong. *Ovary* rudimentary, minute, three-lobed. FEMALE FLOWER. *Sepals* broad, membranous, reniform. *Petals* broadly ovate, obtuse, concave, slightly imbricate. *Disk* cup-shaped, toothed. *Ovary* globose, with three very small conical stigmas. *Drupe* (in New Granada specimen) globose, crowned by the terminal stigmas; endocarp bony, with three pits round the equator, each surrounded by radiating lines. *Seed* globose, intruded at the base, testa brown, albumen solid; embryo opposite one of the pores of the endocarp.—*J. D. H.*

Fig. 1, Reduced figure of the palm; 2, portion of rachis and pinna; 3, a young spine; 4, portion of spadix; 5, male flower; 6, the same laid open; 7, front, and 8, back view of stamen; 9, rudimentary ovary of male flower; 10, female flower; 11, the same with the perianth removed; 12, transverse section of ovary:—*all but figs.* 2, 3, *and* 4 *much enlarged.*

M.S. del, J.N. Fitch lith.

Vincent Brooks, Day & Son Imp.

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Tab. 6855.

MUSCARI Szovitsianum.

Native of Persia and the Caucasus.

Nat. Ord. Liliaceæ.—Tribe Scilleæ.

Genus Muscari, *Miller*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 811.)

Muscari (Bellevallia) *Szovitsianum*; bulbo magno globoso, foliis linearibus viridibus flaccidis facie glaucescentibus canaliculatis, pedunculo erecto semipedali, racemo densissimo primum conico demum oblongo, floribus nitide cœruleis leviter suaveolentibus, fertilibus breviter pedicellatis perianthio obovoideo-oblongo ore constricto segmentis latis imbricatis albidis flore expanso falcatis, staminibus leviter biseriatis prope tubi medium insertis, ovario globoso, stylo ovario æquilongo, floribus sterilibus parvis densis subsessilibus purpureo tinctis.

M. Szovitsianum *Ruprecht MSS.*; *Baker in Gard. Chron.* 1878, N.S. vol. ix. p. 799.

M. racemosum, *var.* brachyanthum, *Boiss. Fl. Orient.* vol. v. p. 295.

The numerous forms of Grape Hyacinth are very nearly allied and difficult to classify botanically. The present plant is intermediate between the two best- and oldest-known types, *M. botryoides* and *M. racemosum*. It has the bright blue flowers of the former, but the raceme is denser, the leaves are narrower, and the perianth a different shape. We first received it at Kew from Max Leichtlin in the year 1876, along with many other rare bulbs, and have found it quite hardy and easy of cultivation. It has a faint scent, and flowers with us at the end of March and the beginning of April. The plate was drawn from a plant in Kew Gardens in April, 1879.

Descr. *Bulb* large as compared with its allies, globose, and if well-developed bearing two or three flowering-stems and numerous leaves. *Leaves* linear, six or nine inches long at the flowering-time, a quarter of an inch broad, flaccid, bright green, channelled down the rather glaucous face. *Peduncle* terete, half a foot long. *Raceme* very dense, at first conical, finally oblong, an inch and a half or two inches long; central pedicels finally as long as the

flowers; upper and lower shorter. *Fertile flowers* bright blue; perianth obovoid-oblong, a sixth or a fifth of an inch long, distinctly constricted at the throat; teeth a little broader than long, white, falcate when the flower is fully expanded. *Stamens* inserted at the middle of the perianth-tube, slightly biseriate. *Ovary* globose; style as long as the ovary. *Sterile flowers* twelve to twenty, dense, subsessile, tinged purple.—*J. G. Baker.*

Figs. 1 and 2, Flowers from different parts of the raceme; 3, perianth cut open to show the stamens; 4, anther, front view; 5, anther, back view; 6, pistil; 7, horizontal section of ovary:—*all more or less enlarged.*

M.S. del. J.N. Fitch lith.

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TAB. 6856.

LAYIA GLANDULOSA, *Hook. & Arn.*

Native of Western North America.

Nat. Ord. COMPOSITÆ.—Tribe HELIANTHOIDEÆ.

Genus LAYIA, *Hook. & Arn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 395.)

LAYIA (Madaroglossa) *glandulosa;* diffuse ramosa, hispida et glandulosa, foliis sessilibus linearibus obtusis v. acutis integris v. inferioribus sæpe inciso-pinnatifidis, capitulis amplis, involucri bracteis linearibus hispidis glandulosisque, fl. radii 8–13 albis, ligulis amplis late cuneato-obovatis obtuse 3-lobis tubo glanduloso, fl. disci flavis, corollæ tubo glanduloso limbi lobis 5 brevibus patentibus longe ciliatis, disci acheniis clavatis sericeo-villosis, pappi setis rigidis scabridis albis basi longe villosis.

L. glandulosa, *Hook. et Arn. Bot. Beech. Voy.* p. 358; *Torr. et Gr. Fl. N. Am.* vol. ii. p. 394; *A. Gray in Bot. Calif.* vol. i. p. 368; and *Synopt. Fl. N. Amer.* vol. i. pt. 2, p. 314.

L. neo-mexicana, *A. Gray Plant. Wright.* vol. ii. p. 98.

BLEPHARIPAPPUS glandulosus, *Hook. Fl. Bor. Am.* vol. i. p. 316.

ERIOPAPPUS glandulosus, *Arn. in Lindl. Introd. Nat. Syst.* ed. 2, p. 443.

MADAROGLOSSA angustifolia, *DC. Prodr.* vol. v. p. 694.

Though at first sight resembling a *Pyrethrum* or *Matricaria*, more than a *Helianthoid* composite (in which tribe the flowers are generally yellow), this is an undoubted member of that group. It is a very handsome profusely flowering annual, a native of British Columbia, where it was discovered by D. Douglas in 1826, and extends from thence to Southern California in the west, and eastwards to Idahos and the borders of Mexico. Our plants were raised from seed kindly sent by Mr. Thompson, of Ipswich, and flowered in the open border in July, 1885. A. Gray describes a variety with rose-purple rays as occurring in California.

DESCR. A hispidly hairy leafy annual, excessively branched from the base, the hairs simple or mixed with shorter ones that are tipped with black glands, especially on the peduncles and involucres; branches slender, pale, terminating in solitary peduncled heads. *Leaves* alternate, one to one and a half inches long, by one-sixth to a quarter

of an inch broad, sessile by a broad base, linear, obtuse, one-nerved, quite entire, or a few of the lower sparingly pinnatifidly lobed. *Heads* one to one and a half inches in diameter; involucre of linear, rigid, erect, hispid and glandular green bracts. RAY-FLOWERS eight to thirteen; tube glandular, embraced at the base by the dilated auricled margins of the inner bracts; limb broadly cuneately obovate, with three rounded terminal lobes, pearly white. *Pappus* none, or very scanty. *Style-arms* slender, revolute. DISK-FLOWERS tubular-campanulate, very shortly five-lobed; lobes ciliolate. *Anthers* exserted, base obtuse. *Style-arms* revolute. *Achenes* clavate, villous; pappus of ten to twenty rigid scabrid unequal bristles about as long as the achene, and villously hairy below the middle.—*J. D. H.*

Fig. 1, Portion of ray-flower and bract; 2, outer bract; 3, disk-flower; 4, stamens; 5, stigmatic arms; 6, achene and pappus:—*all enlarged.*

M.S del. J.N.Fitch lith.

Vincent Brooks Day & Son Imp.

Tab. 6857.

ROSA PISOCARPA.

Native of British Columbia and Oregon.

Nat. Ord. Rosaceæ.—Tribe Roseæ.

Genus Rosa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 625.)

Rosa *pisocarpa*; gracilis, fere glaber, inermis v. aculeis stipularibus paucis parvis rectis v. ascendentibus, foliolis parvis ellipticis obtusis serratis, floribus parvis solitariis corymbisve paucifloris, bracteis paucis linearibus, calycis tubo urceolato glabro, lobis e basi late ovata longe et anguste productis extus nudis glandulosisve intus pubescentibus apicibus dilatatis, fructu globoso pisi mole vertice infra lobos persistentes erectos constricto, stigmatibus liberis, acheniis dimidiato-oblongis dorso apiceque hirsutis.

R. pisocarpa, *A. Gray in Proc. Amer. Acad.* vol. viii. p. 382, and in *Bot. Calif.* vol. i. p. 187; *S. Wats. Bibl. Ind. N. Amer. Bot.* p. 313, and in *Proc. Amer. Acad. Art. and Sc.* vol. xx. p. 342.

R. nutkana? *var.* microcarpa, *Crepin in Bull Soc. Bot. Belg.* vol. xiv. p. 44.

To discuss the affinities of any rose, British or Exotic, is no light matter even for a specialist in the genus, and I hesitate to offer any opinion upon this little species, which in habit resembles no other known to me. At first sight it seems as different as roses are "inter se" from *R. californica*, which is a much larger, coarser, many-flowered species with recurved prickles; but S. Watson, in his revision of the North American Roses, regards it as "rather doubtfully distinct from that plant, distinguished by the somewhat smaller and more globose fruit, and by the prickles never recurved, but frequently ascending."

R. pisocarpa was first described as a native of Oregon, and a specimen so named by Crepin was gathered by Douglas on the Columbia River in 1826, but as this is of a larger and coarser plant with ovoid fruit, I should refer it to *R. californica*. Dr. Gray and I gathered it in the Upper Sacramento Valley, California, at an elevation of 4000 to 6000 feet in 1877, and it is probably not an uncommon plant in North California. Gray describes the calyx-lobes as reflexed, and the fruiting peduncle as nodding, which is not the case in dried specimens, nor in those that flowered at Kew. In the "Botany of Cali-

fornia," it is further stated that the fruit is not constricted below the calyx-lobes, which it is very conspicuously. The Kew plants were raised from seed received from Prof. Sargent, and flowered in the Arboretum in July; the fruit ripened in September.

DESCR. A small, rather straggling, slender, much branched, nearly glabrous bush, unarmed or with small (rarely stout) straight or upcurved stipular spines. *Leaves* two to three inches long, petiole and rachis very slender, minutely pubescent. *Leaflets* two to three pair and an odd one, three-quarters of an inch long, broadly elliptic, obtuse, finely serrate, dark green but not shining above, paler and puberulous beneath; stipules narrow, not leafy. *Flowers* one inch in diameter, solitary or in few-flowered corymbs, pedicel slender, rarely hispid. *Calyx* glandular; tube urceolate in flower; lobes very long, the broadly triangular ovate base contracted into a very slender lamina three times as long as the tube and slightly dilated at the tip, hoary within. *Petals* orbicular, two-fid, rose-coloured. *Stamens* very numerous, filaments short; anthers pale yellow. *Stigmas* very shortly exserted, free. *Fruit* erect, globose, one-third to one-half of an inch in diameter, bright red, crown contracted into a neck beneath the long erect calyx-lobes. *Achenes* dimidiate-oblong, hirsute on the back and tip.—*J. D. H.*

Fig. 1, Calyx laid open, with stamens and carpels; 2, carpels; 3, ripe fruit of the *natural size;* 4, achene:—*all but fig. 3 enlarged.*

M.S. del J.N. Fitch lith.

Vincent Brooks, Day & Son Imp.

Tab. 6858.

LISSOCHILUS Sandersoni.

Native of Natal.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Lissochilus, *Br.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 536.)

Lissochilus *Sandersoni;* elatus, robustus, foliis 3–4-pedalibus 3–4 poll. latis elongato-lanceolatis subacutis in petiolum elongatum angustatis, scapo cylindraceo, spica pedali rachi robusto, bracteis magnis elliptico-oblongis concavis viridibus, floribus 2–2½ poll. diam., sepalis viridibus brunneo-sphacelatis acutis late oblongis basi angustatis postico paullo majore, petalis amplis sepalis triplo majoribus late falcato-oblongis candidis apice rotundatis, labelli lobis lateralibus amplis erectis concavis sepalis concoloribus, intermedio quadrato integro ambitu purpureo striisque saturate purpureis lineato, disco flavido papillis elongatis 3–5-plici seriatis densis cristato, calcare labelli conico obtuso, columna albida.

L. Sandersoni, *Reichb. f. Otia Botan. Hamburgens. fasc. I.* p. 62, *non Harvey mss.*

A stately species of what was till lately a small genus of Orchids, but which recent collections made in tropical Africa give promise of proving a very large one, with its headquarters in that country. It is, however, more probable that all will merge into *Eulophia*, which, as Mr. N. E. Brown has shown me, cannot be satisfactorily distinguished from it. Of the previous figured kinds, *L. Sandersoni* approaches nearest to *L. Horsfallii*, Batem., of Old Calabar, which, however, differs conspicuously in the narrower sepals, their dark maroon-purple colour, and that of the mid-lobe of the lip, as well as in the disk of the latter being covered with linear toothed wings.

L. Sandersoni is a native of Natal, and was first made known by a drawing sent to Kew by the late Mr. Sanderson in 1867, from which Reichenbach's specific description was drawn up, and a specimen has since been kindly communicated by Mrs. Sanderson. The drawing alluded to appears to have been made from a faded specimen, for though agreeing in all essentials with the plant here figured, the flowers are much smaller and colours faded. There is in the Kew Herbarium a very similar and probably identical

species, collected in the Shire Highlands, Zambesia, by Mr. Buchanan, communicated from the Herbarium of the Edinburgh Botanical Gardens. The *L. Sandersoni* of Harvey is quite a different plant, and, as pointed out in the "Genera Plantarum," referable to the genus *Cymbidium*, from wanting a spur.

For plants of this majestic Orchid, the Royal Gardens are indebted to Mr. Lyle, of Natal, who gave them in 1879. After making some growth, the roots were transferred a few years ago to one of the beds in the Palm House, with a south exposure, where they flowered for the first time in June last.

Descr. *Rootstock* stout, subterranean. *Leaves* three to four feet long by three to four inches broad, elongate-lanceolate, acute, plaited and many-nerved, narrowed into a long petiole, bright green. *Scape* six to seven feet high, robust, cylindric, with one or two sheathing bracts. *Spike* a foot long, erect; rachis stout; flowers pretty close, two to two and a half inches in diameter; bracts one inch long and less, oblong, obtuse or acute, very coriaceous and concave, green with brownish edges. *Sepals* elliptic-oblong, narrowed at the base, incurved, dirty green with suffused brown edges and nerves, dorsal rather the largest. *Petals* very much larger than the sepals, obliquely falcately broadly oblong, obtuse, pure white. *Lip* large, contracted below into a short conoidal obtuse spur; side lobes large, rounded, erect and incurved, very concave, dark green with brownish veins; mid-lobe between square and rounded; limb pale violet with darker purple streaks; disk pale yellow-green, studded with long papillæ in three to five rows. *Column* large, arched, white; anther two-toothed.—*J. D. H.*

Fig. 1, Reduced figure of whole plant; 2, portion of leaf; 3, section of leaf; 4, spike; 5, column and ovary; 6, anther; 7 and 8, pollen-masses and gland:—*all but figs.* 1, 2, *and* 4 *enlarged.*

M.S. del, J.N. Fitch lith.

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TAB. 6859.

CALOTROPIS PROCERA.

Native of Western and Central India.

Nat. Ord. ASCLEPIADEÆ.—Tribe CYNANCHEÆ.

Genus CALOTROPIS, *Brown*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 754.)

CALOTROPIS *procera*; frutex glaber, inflorescentia appresse lanata, foliis subsessilibus ovatis obovato-oblongis obovatisve acutis basi cordatis, floribus alabastro depresso-globosis corymbosis, pedicellis gracilibus, corollæ lobis late ovatis acutis planis incurvis extus albis intus purpureis, columna staminea brevi squamis brevibus bifidis, calcaribus incurvis.

C. procera, *Brown in Ait. Hort. Kew.* ed. 2, vol. ii. p. 78; *Hamilt. in Trans. Linn. Soc.* vol. xiv. p. 246; *Wight Contrib.* p. 53, and *Ic.* t. 1278; *Brand. For. Fl.* p. 331; *Boiss. Fl. Orient.* vol. iv. p. 57; *Dene. in DC. Prodr.* vol. viii. p. 535; *Hook. f. Fl. Brit. Ind.* vol. iv. p. 18; *Bot. Reg.* t. 1792; *Bentl. et Trim. Med. Pl.* (*excl. cit. Rheede*), t. 176.

C. Hamiltoni, *Wall. Cat.* n. 8215; *Wight Contrib.* p. 53.

C. Wallichii, *Wight Contrib.* p. 53; *Wall. Cat.* n. 8216.

C. heterophylla, *Wall. Cat.* n. 8217; *Wight Contrib.* p. 53.

Asclepias procera, *Willd. Sp. Pl.* 1263; *Schneevogt Ic.* t. 18.

A. gigantea, *Andrews Bot. Rep.* t. 271.

A frequent native of Western and Central India, where it is known chiefly for its medicinal properties as "Mudar," from Scinde and the Panjab, eastwards to Behar and Bombay, reappearing in Ava, but not inhabiting the Deccan, nor the eastern districts of Bengal and the Malayan Peninsula and Islands; on the other hand it has an immense extension westwards, through Affghanistan into Persia and Syria, and over many drier parts of N. tropical Africa to the Cape de Verd Islands. The inner bark yields a strong flax (Mudar and Yercum fibre), from which halters, lines, and ropes are made; the silky hairs of the seeds are used to stuff mattresses; the acrid milky juice, mixed with salt, is employed to remove hair from hides; pieces of the roots are in common use for tooth-brushes, or rather are used as tooth-rubbers, and gunpowder charcoal is made of the wood. In all these properties and uses it resembles *C. gigantea* (Plate 6862) in greater or less degree, as it

does also in repute of the drug derived from the powdered bark of the root, stem, and branches. This, the famous Mudar of Oriental physicians, is much used as an alterative tonic, diaphoretic, and in large doses as an emetic, and is used in many other diseases, especially in dysentery, as an excellent substitute for ipecacuanha. It is, however, not in the British or American official Pharmacopœias, but is in the Indian.

C. procera has been long known in Europe. Prosper Alpinus, at the end of the last century, alludes to it as a native of Egypt; and according to Aiton it was introduced into England in 1814 by the Duchess of Beaufort, from Persia. It has been repeatedly raised at Kew, and lost by over-watering. The plant here figured was raised from seed sent by Dr. King, of the Botanical Gardens, Calcutta, which flowered in June.

Descr. A shrub, six to ten or even fifteen feet high, with rather slender glabrous branches and leaves, the younger parts hoary, and inflorescence clothed with appressed wool. *Leaves* four to ten inches long, subsessile and amplexicaul, coriaceous, glabrous when old, young hoary beneath, oblong or obovate-oblong, acute with a ring of hairs at the very base. *Flowers* one-half to two-thirds of an inch in diameter, in axillary peduncled subcorymbose umbels; peduncle and pedicels slender. *Sepals* ovate, small, green. *Corolla-lobes* broadly ovate, spreading and incurved, white without, purple within to a greater or less depth, with a white base and margin. *Staminal column* very low, with five bifid purple points, and as many incurved (not involute) horns at the base. *Fruit-follicles* three to five inches long, oblong, recurved, rounded at both ends, yellow-green, bladdery. *Seeds* three-quarters of an inch long, with a long silky coma.—*J. D. H.*

Fig. 1, Sepal; 2, staminal column; 3, pollen-masses:—*all enlarged.*

M.S. del, J.N. Fitch lith.

Vincent Brooks, Day & Son Imp.

TAB. 6860.

SYNTHYRIS RENIFORMIS.

Native of California and Oregon.

Nat. Ord. SCROPHULARINEÆ.—Tribe DIGITALEÆ.

Genus SYNTHYRIS, *Benth.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 963.)

SYNTHYRIS *reniformis;* glaberrima v. sparse pilosa, foliis longe petiolatis coriaceis cordato-rotundatis duplicato-crenatis dentatisve, scapo robusto erecto foliis longiore bracteato, racemis multifloris, bracteis oblongis obtusis, pedicellis sepalis subæquilongis, corollæ pallide violaceæ tubo globoso, lobis oblongo-lanceolatis postico majore 2-dentato, capsula orbiculari 2-fida valde compressa pleiosperma, seminibus compressis marginibus tenuibus.

S. reniformis, *Benth. in DC. Prodr.* vol. x. p. 454; *Hook. Kew Journ. Bot.* vol. v. p. 257; *A. Gray Synopt. Fl. N. Am.* vol. ii. pars 1, p. 285; *Bot. Calif.* vol. i. p. 571, in part, and vol. ii. p. 474.

Wulfenia reniformis, *Dougl. in Hook. Fl. Bor. Am.* vol. ii. p. 102.

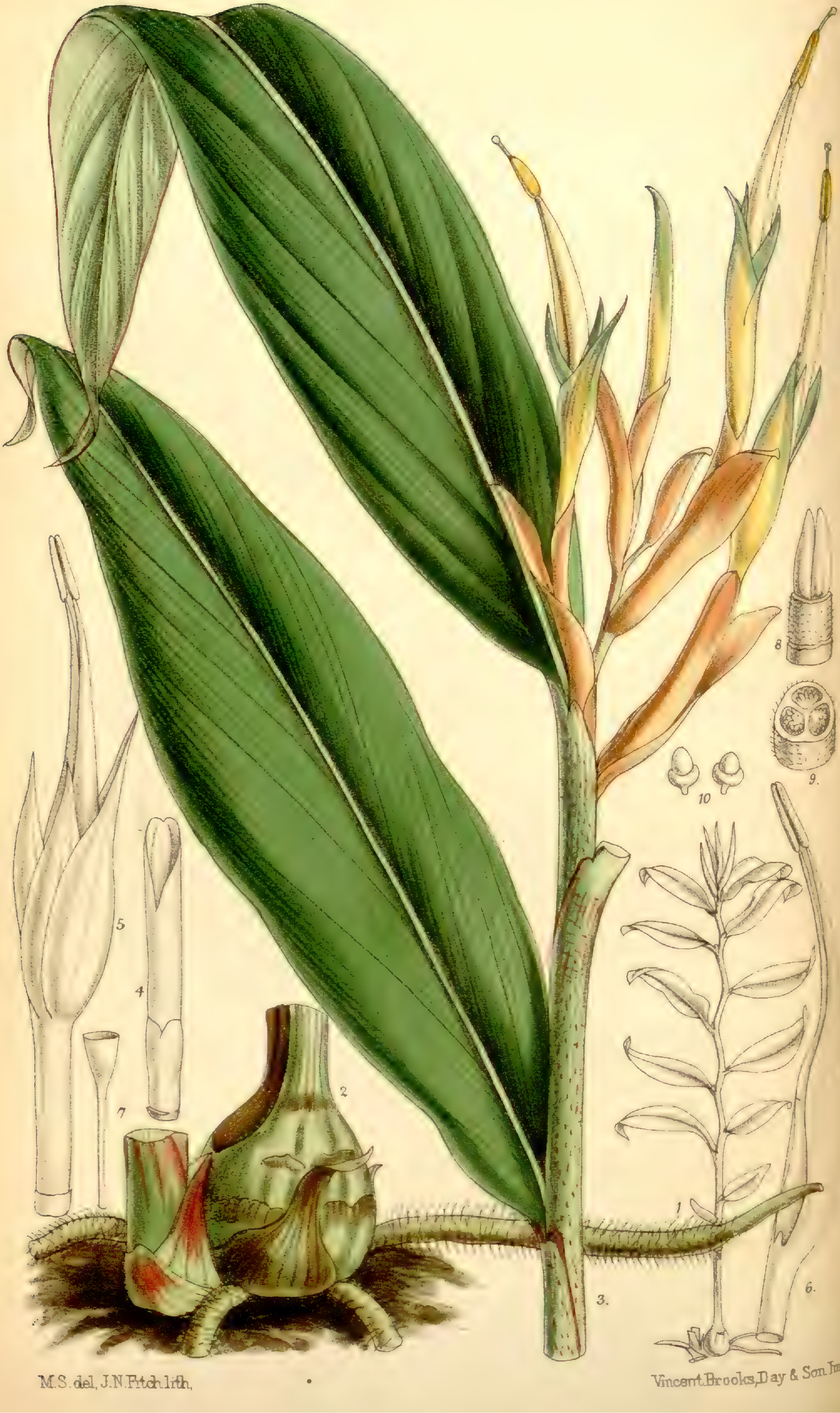
The genus *Synthyris*, of which seven species are described, all North-Western American, is the New World representative of the *Wulfenias* of the Alps of Eastern Europe and the Himalaya, approaching that genus very nearly both in habit and characters. Of the described species, two seem to have been a good deal confounded, the *S. reniformis*, Benth., and *S. rotundifolia*, Gray, from the fact of both being figured under the former name in the "Flora Boreali Americana," one in flower and the other in fruit. Of these, one, distinguished by Gray as *S. rotundifolia*, is a small plant, with weak slender scape, shorter than the membranous broadly crenate leaves, a small few-flowered raceme with slender pedicels, broader sepals and corolla-lobes, and, according to Gray, fewer seeds in the cells of the capsule. The other, the subject of this plate, is a much larger stouter plant, with more acutely cut coriaceous leaves, longer stouter scape, and long racemes, shorter pedicels, narrow sepals and corolla-lobes, a globose corolla-tube and more seeds in the cells. Both were found in the mountains near the Grand Rapids of the Columbia River and the Blue Mountains by Douglas in 1827, and are

figured on the same plate in the "Flora Boreali Americana" as *Wulfenia reniformis*, which latter name is now retained for that here figured. Its range is from Oregon to N. California, and westwards to Idaho. *S. rotundifolia* inhabits, besides the habitat given by Douglas, Fort Vancouver and the Willamette River, and a var. *cordata*, Gray, occurs in Mendocino County, California. May it not be possible that these supposed species are sexual forms of one? The capsule varies very much in *S. reniformis*, from orbicular and obscurely retuse to broadly two-lobed.

For plants of *S. reniformis* the Royal Gardens are indebted to Mr. Brockbank, of Didsbury, Manchester, with whom it flowered in April of last year. It is perfectly hardy.

Descr. Glabrous or obscurely hairy. *Rootstock* stout, elongate. *Leaves* one and a half to two and a half inches in diameter, orbicular-cordate, coriaceous, doubly-toothed, often sharply, sinus narrow, bright green on both surfaces. *Scape* five to ten inches long, stout, with many scattered leafy crenate sessile or petioled bracts. *Raceme* erect, four to six inches long, very many- but not dense-flowered; bracts coriaceous, oblong, longer than the pedicels, which about equal the sepals. *Flowers* pale violet, about a quarter of an inch long. *Sepals* linear-oblong and pedicels glandular-hairy. *Corolla-tube* inflated, globose, hairy within, shorter than the sepals; lobes oblong-lanceolate, unequal, dorsal largest two-toothed, anterior smallest. *Stamens* exserted; anthers large. *Ovary* globose, hairy; style slender, stigma capitate. *Capsule* flat, erect, a quarter of an inch in diameter, orbicular, retuse or notched, or with diverging lobes. *Seeds* flat.—*J. D. H.*

Fig. 1, Flower; 2, corolla; 3, interior of tube of ditto and stamens; 4, ovary; 5, transverse section of ditto; 6, capsule and calyx:—*all enlarged.*



M.S. del, J.N. Fitch lith.

Vincent Brooks, Day & Son Imp.

TAB. 6861.

RHYNCHANTHUS LONGIFLORUS.

Native of Burma.

Nat. Ord. SCITAMINEÆ.—Tribe ZINGIBEREÆ.

Genus novum, RHYNCHANTHUS; *Hook. f.*

GEN. CHAR. *Calyx* anguste tubulosus, ore fisso, truncatus, retusus. *Corollæ tubus* elongatus, superne dilatatus; lobi breves, ovato-lanceolati, longe acuminati, erecti, postico paullo majore. *Staminodia* lateralia 0; labellum obsoletum. *Filamentum* valde elongatum, longe exsertum, curvum, anguste cymbiforme, teres, in rostrum elongatum antheriferum productum; anthera breviter linearis, 2-locularis, connectivo non producto. *Ovarium* 3-loculare, ∞-ovulatum, stylodiis 2 oblongis coronatum; stylus filiformis, ultra antheras productus, stigmate infundibulari truncato.—Herba *gracilis, rhizomate tuberoso radices crassas tomentosas emittente.* Caulis *erectus, foliosus.* Folia *disticha, oblongo-lanceolata, acuminata.* Flores *in spica terminali pauci, sessiles, 4-pollicares, anguste tubulosi; bracteæ 2, elongatæ, membranaceæ, coloratæ.* Corolla *pallide virescens; filamento stramineo.*

This very curious plant differs generically from any hitherto described. In some respects it approaches *Burbidgea* (Plate 6403), next which it will stand in the Order, and which it resembles a little in the long flower-buds; but here all resemblance ends, *Burbidgea* having thick coriaceous glossy leaves (most unusual in the Order), shortly pedicelled flowers with caducous bracts, large broad spreading corolla-lobes, a distinct lip, the blade of which embraces the anthers, a stamen with a very short filament, an anther terminated with a very long appendage, and a minute oblique almost spathulate stigma. *Rhynchanthus*, on the other hand, has the ordinary membranous leaves of *Zingibereæ*, sessile flowers with very large loose membranous probably persistent bracts, remarkably small erect corolla-lobes, a lip reduced to a mere point, and a most curious petaloid filament, like a very long canoe, exserted far beyond the corolla-lobes, terminated by an anther with no appendage, and the stigma is erect and funnel-shaped.

Rhynchanthus was procured from Burma by Messrs. Low, of the Clapton Nurseries, and was presented early in last year to Kew, where it flowered in a stove in July.

FEB. 1ST, 1886.

Unfortunately no record was kept at the Nursery of the exact locality where it was found, or of its discovery.

DESCR. *Rootstock* tuberous, broadly ovoid, one to one and a half inches in diameter, green, fleshy, sending out very stout worm-like tomentose roots, and from its side the young stem of the following year. *Stem* eighteen inches high, erect, slender, with ten or twelve distichous leaves. *Leaves* six to eight inches long by one and a half inches broad, oblong-lanceolate, acuminate, membranous, bright green, with a very narrow brown edge, base contracted into a very short petiole; sheath slender, pale, with short rounded auricles at the mouth. *Flowers* four inches long, few, erect, in a terminal subsessile spike with a slender rachis. *Bracts* two, one and a half inches long, spathaceous, linear-oblong, obtuse, very membranous, hyaline, pale orange-red. *Calyx* shorter than the bracts, tubular, with a split mouth and rounded retuse tip. *Corolla* pale yellow-green; tube two inches long, swollen above the middle; lobes one-third of an inch long, ovate-lanceolate, long-acuminate, concave, erect, greener than the tube. *Lip* reduced to a mere point at the base of the filament. *Filament* one and a half inches long, elongate, boat-shaped, being swollen in the middle and open in front, slightly curved, exserted far beyond the perianth, contracted into a long point at the tip, straw-coloured; anther shortly linear-oblong, orange-yellow. *Ovary* very short, pubescent, three-celled, many-ovuled, crowned with two oblong stylodes; style very slender, exserted beyond the anther, stigma funnel-shaped; mouth truncate, entire, not ciliate.—*J. D. H.*

Fig. 1, Reduced view of whole plant; 2, rootstock; and 3, stem of the natural size; 4, calyx clothed at the base with the base of the inner bract (concealing the ovary); 5, corolla and stamen; 6, stamen; 7, top of style and stigma; 8, ovary and stylodes; 9, transverse section of ovary; 10, ovules:—*all but figs.* 1, 2, *and* 3 *enlarged.*

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M.S del, J.N Fitch lith.

Vincent Brooks, Day & Son Imp.

TAB. 6862.

CALOTROPIS GIGANTEA.

Native of India.

Nat. Ord. ASCLEPIADEÆ.—Tribe CYNANCHEÆ.

Genus CALOTROPIS, *Br.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 754.)

CALOTROPIS *gigantea*; arbuscula ramulis foliis subtus et inflorescentia appresse lanatis, foliis sessilibus late oblongis v. cuneato-oblongis obovatisve submucronatis basi cordatis v. amplexicaulibus, pedunculis axillaribus, floribus alabastro ovoideis corymbosis albis v. lilacinis pedicellis crassis, corollæ lobis revolutis tortisque, columna staminea magna crassa truncata, calcaribus basi involutis.

C. gigantea, *Br. in Ait. Hort. Kew.* ed. 2, vol. ii. p. 78; *Hamilt. in Trans. Linn. Soc.* vol. xiv. p. 245; *Wight Ill. Pl. Ind. Or.* t. 155, 156 A; *Brand. For. Flor.* p. 331; *Griff. Ic. Pl. Asiat.* t. 397, 398; *Dene. in DC. Prodr.* vol. viii. p. 535; *Hook. f. Fl. Brit. Ind.* vol. iv. p. 17; *Bot. Reg.* t. 58.

Asclepias gigantea, *Willd. Sp. Pl.* p. 1264; *Roxb. Fl. Ind.* vol. ii. p. 30.

Ericu et Bel-ericu, *Rheede Hort. Mal.* vol. ii. pp. 52, 56, t. 31.

Both this and *C. procera* having flowered in the same month of the same year, I have taken the opportunity of figuring both in the same number of the MAGAZINE. *C. gigantea* is a much larger coarser plant than *C. procera*, and the area it inhabits is much more extended to the eastward, reaching China and Borneo. It occurs in waste places throughout India, from the Panjab and Scinde to Ceylon and Singapore, often gregariously, and ascends the Himalayan valleys to 3000 feet elevation. Brandis remarks of it, that it may be said to belong to the moister districts of India, and its congener to the drier; but this is only so far the case that the latter never reaches the more rainy regions of Bengal and transgangetic India, where *C. gigantea* abounds. A better contrast is afforded by the extra-Indian distribution of the two; that of *C. gigantea* being to the eastward, reaching China, and of *C. procera* confined to the westward, and reaching the Cape de Verd Islands. The properties of the two are akin, but the strong silky flax yielded by the inner bark of *C. gigantea* is finer, and used for making the robes of native princes, as also for bow-strings, fishing-lines and nets, for which latter purpose its

indestructibility in water recommends it. It is also used, as Mudar, medicinally, and a fine gunpowder charcoal is made from the wood. Rheede distinguishes a white and lilac-flowered variety by the colour alone. Roxburgh follows him in this.

The specimen here figured was raised from seeds sent from the Kurnod district, Madras, by the Rt. Hon. M. E. Grant Duff, Governor of Madras, in 1883, which flowered in June of the present year. According to Aiton, it was cultivated in the Royal Gardens at Hampton Court as early as 1690. In India it flowers and fruits all the year round.

Descr. A large shrub, almost a small tree, never leafless, with a trunk sometimes as thick as the thigh, and spreading sparingly leafy branches covered with ash-coloured bark; shoots, leaves beneath and inflorescence clothed with white wool. *Leaves* four to six inches long, leathery, pale green, opposite, decussate, subsessile, obovate or cuneately oblong, acute or mucronate; base often retuse, ciliate at the insertion of the very short petiole; sometimes semi-amplexicaul. *Flowers* one to one and a half inches in diameter, in simple or subcorymbose umbels, with very thick peduncles and pedicels; colours a mixture of white, pale rose-coloured and lilac, buds ovoid. *Sepals* small, ovate. *Petals* broadly ovate, reflexed and twisted in flower. *Staminal column* very large, one-half to two-thirds of an inch long and almost as broad, between conical and broadly oblong, rather turgid in the middle, almost truncate at the top, spurs at the base involute, margins of the appendages tomentose. *Fruit-follicles* three to five inches long, oblong, recurved, rounded at both ends, pale yellow, bladdery. *Seeds* three-quarters of an inch long, with a long silky coma.—*J. D. H.*

Fig. 1, Section of calyx, staminal column, and ovary; 2, top of staminal column; 3, pollen-masses:—*all enlarged.*

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Tab. 6863.

ALOE HETERACANTHA.

Native country unknown.

Nat. Ord. Liliaceæ.—Tribe Aloineæ.

Genus Aloe, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 776.)

Aloe *heteracantha*; caule brevissimo simplici, foliis 15–30 dense rosulatis lanceolatis pedalibus obscure verticaliter lineatis parce irregulariter albo maculatis facie sæpe lineis 2 elevatis verticalibus percursis margine inermibus vel aculeis paucis inæqualibus deltoideis armatis, floribus racemoso-paniculatis, pedunculo valido ancipiti, racemis densis cylindricis, pedicellis flore 2–3-plo brevioribus, bracteis ovatis pedicello brevioribus, perianthio cylindrico splendide rubro tubo brevissimo, genitalibus perianthio æquilongis.

A. heteracantha, *Baker in Journ. Linn. Soc.* vol. xviii. p. 161.

This is an Aloe which we have had for a long time at Kew, but have never before flowered, and of which the flowers have never been described. Its history is not clearly known, but it is believed to have been brought from the Jardin des Plantes at Paris many years ago by Mr. Cooper. It has been thought that it might be identical with the *Aloe inermis* of Forskahl, an inhabitant of Arabia Felix, but of this no specimens are known to exist, and the description is extremely incomplete. Mr. Brown tells me that it has also been flowered at Reigate in the open air by Mr. Cooper, and that when so grown the leaves are much smaller than in our plant, and strongly tinted with red-brown. Our plant was grown under a subtropical temperature, and the drawing was made in June, 1885.

Descr. *Stem* simple, very short. *Leaves* fifteen to thirty in a dense rosette, ascending, lanceolate, half to one foot long, one and a half to two and a half inches broad low down, narrowed gradually to the concave apex, green or in exposure tinted with red-brown, obscurely vertically lineate towards the base, often with a few irregular small whitish spots, and often marked down the face with one or two faint raised vertical ribs, usually furnished with a few irregular spreading deltoid prickles on the margin. *Inflores-*

cence three feet high in the specimen drawn, consisting of three branches; main peduncle very stout, ancipitous, a foot long below the lowest branch; racemes dense, cylindrical, half a foot or a foot long, three inches in diameter; pedicels ascending, cernuous at the tip, the lower half or three-quarters of an inch long; bracts ovate, acute, shorter than the pedicels. *Perianth* cylindrical, an inch and a quarter or an inch and a half long; tube very short; outer segments bright red; inner whitish, with a red keel. *Stamens* as long as the perianth; anthers oblong, reddish-yellow. *Style* longer than the ampullæform ovary, reaching to the tip of the perianth-segments.—*J. G. Baker.*

Fig. 1, The whole plant, *much reduced;* 2, leaf, *natural size;* 3, raceme, *natural size;* 4, a single flower; 5, flower, with perianth-segments cut away; 6 and 7, stamens; 8, pistil; 9, ovary; 10, horizontal section of ovary:—*all more or less enlarged.*

M.S. del, J.N.Fitch, lith.

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J. Reeve & Co. London.

TAB. 6864.

COLENSOA PHYSALOIDES.

Native of New Zealand.

Nat. Ord. CAMPANULACEÆ.—Tribe LOBELIEÆ.

Genus COLENSOA, *Hook. f.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 557.)

COLENSOA *physaloides*, *Hook. f. Fl. Nov. Zel.* vol. i. p. 157, and *Handbook of New Zeald. Fl.* p. 170.

Lobelia physaloides, *A. Cunn. Bot. N. Zeald. in Tayl. Ann. Nat. Hist.* vol. ii. p. 20; *DC. Prodr.* vol. vii. Addit. p. 785; *Hook. Ic. Pl.* t. 555.

The natural family of *Campanulaceæ*, of which upwards of thirty species inhabit Australia, is very poorly represented in New Zealand, where, however, a monotypic genus, the subject of the present plate, is endemic. This last in floral characters comes near to *Pratia*, a genus found in all three continents of the southern hemisphere, which extends into tropical Asia, and which differs from *Colensoa* in the usually small size and creeping habit of the species, their more equal corolla-lobes, and solitary flowers, and in some or all the anthers being strongly bearded or terminated by bristles. In other respects *Colensoa* is a gigantic *Pratia*. The name it bears is that of one who well deserves the name of the patriarch of living New Zealand Naturalists, W. Colenso, Esq., the friend of Allan Cunningham, who botanized the Northern Island in 1838, the companion of Darwin in some of his rambles about the Bay of Islands in 1835, and the zealous aider of the Naturalists of the Antarctic Expedition in 1841. Of him it is written in the Preface to the "Handbook of the New Zealand Flora," that "during many successive years he has collected throughout the whole length of the Northern Island with great care and skill, discovering more rare and new plants than any botanists since Banks and Solander," and that "in every respect Mr. Colenso is the foremost New Zealand Botanical Explorer, and the one to whom the author of the Flora of that country is the most indebted

for specimens and observations." Nor have Mr. Colenso's researches been confined to Botany; he was the first to bring to notice the former existence of the gigantic birds, the Moas, and his labours in the Language, Ethnology, Habits, Customs, Arts and Manufactures of the Natives of New Zealand are no less valuable than are his botanical ones.

Colensoa is, as far as hitherto known, confined to the northern parts of the Northern Island of New Zealand, from Wangaroa to Cape North, where it occurs on the margins of forests. It was first found by Richard Cunningham in 1834, who referred it to *Lobelia*, from which its fruit abundantly distinguishes it.

The plants here figured were raised at Kew from seeds sent by Dr. Hector, F.R.S., in 1883, which flowered in September, 1885, in a cool frame.

Descr. A stout glabrous simple or sparingly-branched herb, two to three feet high; stem succulent, dull purplish, obtusely angled below. *Leaves* alternate, petioled, four to six inches long, ovate or elliptic-ovate, acute, coarsely often doubly serrate or toothed, bright green, pale beneath; petiole one to five inches long, slender. *Flowers* two inches long, in axillary usually few-flowered (rarely eight to ten-flowered) racemes, inclined or horizontal; pedicels a quarter to half an inch long, with small scattered subulate bracts. *Calyx-tube* hemispheric, obscurely five-furrowed; lobes subulate, as long as the tube. *Corolla* very pale blue, two-lipped, at length split to the base posteriorly, tube very short; upper lip of two linear erect acuminate lobes; lower as long, but much broader, reflexed, oblong, three-toothed at the tip. *Staminal column* pubescent; anthers firmly united, hirsute, tips hardly bearded. *Stigma* at first capitate, at length two-lobed. *Berry* globose, nearly one inch in diameter, five-lobed, dark blue, thinly fleshy, crowned with the calyx-lobes. *Seeds* very numerous, minute, globose, tuberculate.—*J. D. H.*

Fig. 1, Flower with the calyx-teeth and corolla removed; 2, tips of two filaments and anthers; 3, transverse section of fruit; 4, a seed:—*all enlarged.*

6865.

M.S.del, J.N.Fitch.lith

Vincent Brooks, Day & Son Imp

L.Reeve & Cº London.

Tab. 6865.

JASMINUM ANGULARE.

Native of South Africa.

Nat. Ord. Oleaceæ.—Tribe Jasmineæ.

Genus Jasminum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 674.)

Jasminum *angulare;* glabrum pubescens v. tomentosum, ramulis sæpe tortuosis costato-angulatis v. teretiusculis, foliis oppositis 3-foliolatis, foliolis petiolulatis ovatis oblongis rotundatis lanceolatisve obtusis subacutis v. mucronatis coriaceis, basi obtusis acutis rotundatis v. cordatis, pedunculis axillaribus et in paniculam terminalem dispositis, trifloris, floribus pedicellatis, calycis tubo breviter cylindraceo lobis brevibus acutis, corollæ albæ tubo $\frac{1}{3}$–$1\frac{1}{2}$ poll. longo gracili, fauce vix ampliata, lobis 5–7 lineari-oblongis obtusis.

J. angulare, *Vahl Symb.* vol. iii. p. 1, and *Enum.* vol. i. p. 32; *Willd. Sp. Pl.* vol. i. p. 38; *DC. Prodr.* vol. viii. p. 311.

J. tortuosum, *Willd. Enum. Pl.* vol. i. p. 10; *DC. l. c.*

J. flexile, *Jacq. Hort. Schoenbr.* vol. iv. p. 46, t. 490, *non Vahl.*

J. campanulatum, *Link. Jahrb.* vol. i. 3 H. p. 30; *Enum. Alt.* vol. i. p. 32.

J. capense, *Thunb. Prodr. Fl. Cap.* p. 2; *Fl. Cap.* p. 41.

Var. glabratum, *E. Mey. in Coll. Drege; DC. l. c.;* wholly or nearly glabrous.

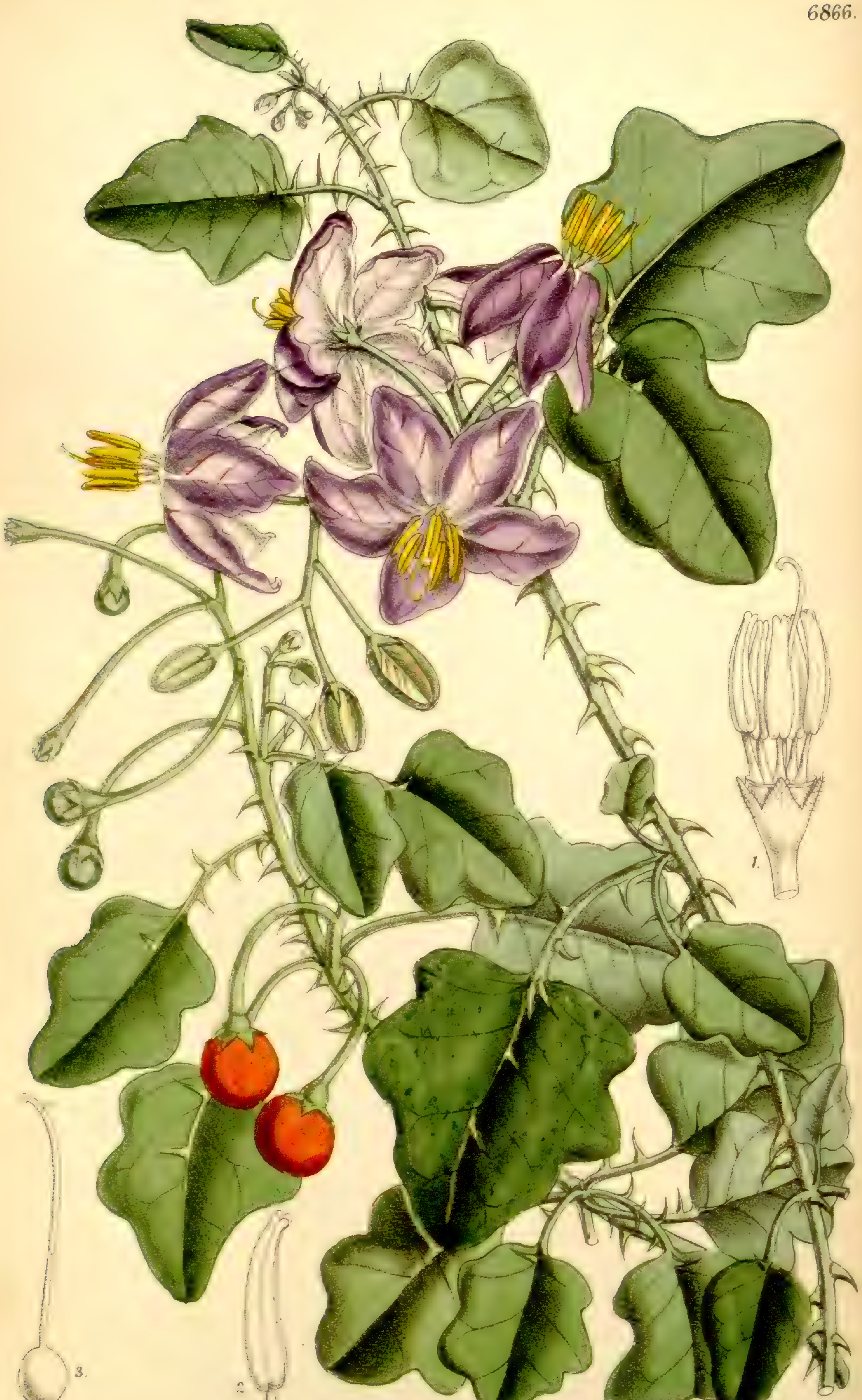
Apparently a common Cape plant, with an extended distribution from the Cape Colony proper eastward to British Kaffraria and Natal. It was introduced into European Gardens early in the century, being figured in Jacquin's noble work on the "Plants of the Imperial Gardens of Schoenbrunn" near Vienna. It is not, however, introduced into "Hortus Kewensis," and the only British-grown specimen known to me is that here figured, which was obtained from the Cape by Mrs. Birks, and flowered in the Cambridge Botanical Gardens in July of last year. Mr. Lynch, to whom I am indebted for sending it, informs me that it is extremely pretty, and adorns a rafter of one of the greenhouses in the Botanic Gardens. Had it but the odour and hardiness of the Caucasian *J. officinale*, it would indeed be an acquisition to our domestic horticulture.

Like all its congeners, *J. angulare* is an exceedingly variable plant, and is indeed more so than most; for along

with the protean foliage, and length of the corolla-tube, and size and breadth of its lobes, it varies from being quite glabrous to softly tomentose with white hairs; and the calyx-teeth, though usually very short and triangular-subulate, are sometimes narrowly subulate, and as long as the calyx-tube. Thunberg's name of *capense* is most applicable, but unfortunately a few years later in date than the much less apposite one of *angulare*. That *J. tortuosum* is the same thing seems certain; the names have been promiscuously applied in the collections of Cape Botanists, and the characters given for the two are not distinctive.

Descr. A slender long branching climber, glabrous, pubescent or tomentose, or with pubescence confined to the axils of the leaf-nerves beneath, with green branches terete below and obtusely or subacutely four- to five-ribbed rather than angled towards the tips. *Leaves* opposite, trifoliolate, green, coriaceous; leaflets petiolulate, one to two inches long, of all forms between ovate orbicular and lanceolate, obtuse acute or mucronate; base acute, rounded, or rarely cordate; petiolules a quarter to one-third of an inch long; nerves few and slender. *Flowers* in clusters of three, which are axillary or disposed in a terminal panicle, pedicelled, white, inodorous. *Calyx* one-sixth of an inch long, cylindric-oblong, with five teeth which are equal to or shorter than the tube. *Corolla* white, tube two-thirds to one and a half inch long, very slender; lobes five to seven, lanceolate, subacute. *Fruit* of two globose carpels the size of a small pea.—*J. D. H.*

Fig. 1, Portion of base of leaflet, seen from beneath, showing tuft of hairs in axils of leaf-nerves; 2, section of branchlet; 3, calyx and style; 4, portion of corolla and stamen:—*all enlarged.*



M. S. del. J.N. Fitch lith.

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TAB. 6866.

SOLANUM TRILOBATUM.

Native of the East Indies.

Nat. Ord. SOLANACEÆ.—Tribe SOLANEÆ.

Genus SOLANUM, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 888.)

SOLANUM *trilobatum*; suffrutex subscandens, stellatim tomentellus, demum glaber, ramis flexuosis tenuibus rigidiusculis petiolisque aculeis validis recurvis armatis, foliis subremotis petiolatis ovatis rotundatis oblongisve obtusis inæqualiter sinuato-3–5-lobatis, cymis lateralibus axillaribus et terminalibus paucifloris, pedicellis gracilibus elongatis, calycis lobis parvis, corollæ amplæ violaceæ v. albæ lobis ovatis obtusis, bacca globosa rubra calyce immutato suffulta, seminibus lævibus.

S. trilobatum, *Linn. Sp. Pl.* p. 188; *Burm. Fl. Ind.* p. 57, t. 22; *Roxb. Fl. Ind.* vol. i. p. 571; *Ait. Hort. Kew*, ed. 2, vol. i. p. 405; *Dunal Solan.* p. 225, and in *DC. Prodr.* vol. xiii. pt. 1, p. 287; *Wight Ic. Pl. Ind. Or.* t. 854; *Clarke in Hook. f. Fl. Brit. Ind.* vol. iv. p. 236.

S. acetosæfolium, *Lamk. Dict.* vol. iv. p. 306; *Dunal Solan.* p. 226.

S. canaranum, *Miq. Pl. Exsicc. Hohenack.*, No. 740.

It is rather remarkable that this very common and really ornamental Indian plant should not have been figured in any English work, though introduced into cultivation a hundred and thirty years ago. It is enumerated in Miller's "Gardener's Dictionary," and in the "Hortus Kewensis," which gives the date of its cultivation in Miller's garden as 1759. It is a very common plant in rubbishy places of the Western Peninsula of India and in Ceylon, growing prostrate and also ascending bushes for several feet by its hooked prickles. In the Eastern Peninsula it is found from Arracan to Malacca, in tidal swamps, and it occurs also in China. Roxburgh, who gives an excellent description of it, says that the leaves are a favourite pot-herb of the Telingas in the Northern Circars.

The plant figured was raised from seed sent from Madras by the Rt. Hon. M. E. Grant Duff, Governor of Madras, and flowered in September.

DESCR. A prostrate rambling or climbing nearly glabrous undershrub. *Stem* two to five feet high, slender,

woody, terete, rigid, sparingly or copiously branched, armed with stout recurved prickles, as are the petioles, midrib and sometimes the nerves of the leaf beneath, and often the peduncles. *Leaves* alternate, one to three inches long, long-petioled, oblong rounded or ovate, obtusely unequally sinuately three- to five-lobed, smooth, shining, green on both surfaces. *Peduncles* usually leaf-opposed, but sometimes terminal from the arrest of a terminal bud, rarely axillary, solitary or accompanied by a single flowered pedicel, three- to six-flowered; peduncles and pedicels slender. *Calyx* small, green; lobes ovate, subacute. *Corolla* one to one and three-quarters of an inch broad, usually violet blue, but sometimes, according to Roxburgh, white; lobes ovate-oblong obtuse, midrib of each lobe white at the base, giving a stellate appearance to the base of the corolla. *Stamens* large, golden yellow. *Berry* globose, the size of a large pea, smooth, scarlet.—*J. D. H.*

Fig. 1, Flower with the corolla removed; 2, stamen; 3, pistil:—*all enlarged*.

M.S. del. J.N. Fitch, lith.

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Tab. 6867.

ECHINOCACTUS Joadii.

Native of Uruguay?

Nat. Ord. Cacteæ.—Tribe Echinocacteæ.

Genus Echinocactus, *Link and Otto*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 348.)

Echinocactus *Joadii*; parvulus, depresso-globosus, vertice alte depressus, læte viridis, costis ad 20 ⅓ poll. latis crenato-areolatis areolis (crenisve) subdepresso mammillæformibus apice rotundatis lævibus, spinis intercrenalibus 15–25 exterioribus inæquilongis gracillimis erecto-patentibus albis, 1–4 centralibus fere duplo longioribus et fortioribus rubris porrectis, perianthio infundibulari 2–3 poll. lato, tubo 1½ poll. longo squamis perplurimis arcte imbricatis dense obtecto, squamis oblongis ⅓ poll. longis apice pilis longis tortis crinitis, apice squamula lanceolata setisque 8–10 erecto-patentibus rubris instructis, sepalis petalisque perplurimis pluriseratis lineari-lanceolatis acuminatis pallide aureis, antheris minutis, stigmatibus 10–12 erectis coccineis.

This beautiful species was in the rich collection bequeathed to the Royal Gardens by the late Mr. Joad, of Wimbledon, bearing the name of *E. mammulosus*, from the description of which, however, it widely differs. In form, size, number of ribs and their lobing into mammillæ, it agrees with that species, but the spines are far more numerous, more slender, none of them are flattened, and the inner ones are not deflexed. Mr. N. E. Brown, who has paid a good deal of attention to these plants, and has helped me in the determination of this, regards the species with recurved flattened inner spines as forming a very distinct group from those which, like *E. Joadii*, have perfectly terete slender straight ones. The difficulty of naming these *Cacti* from descriptions is so great, that it is with great hesitation that I put this forward as a new species; but no other course presents itself. *E. concinnus*, figured at p. 551 of the second edition of "Forster's Cacteen," and which is always placed next to *E. mammulosus*, strongly resembles this in form, habit, and in the disposition of the spines, but it has fewer broader ribs, only twelve to fourteen spines in a group, and has lanceolate scales in the perianth-

tube. It must, however, be a very near ally. As both *E. mammulosus* and *concinnus* are natives of Uruguay, I have doubtfully assumed *E. Joadii* to be a countryman of those species.

Descr. Plant two and a half inches in diameter, depressed globose, with a sunken crown, green, glabrous, except a the spine-bases. *Ribs* about twenty, vertical, rounded, crenately lobed into low rounded mammillæ, which are most prominent towards the crown of the plant. *Spines* in groups of fifteen to twenty-five, sunk in the crenatures, with a small tuft of pale hairs at their bases; all very slender, terete and quite straight, outer a quarter to one-third of an inch long, erecto-patent, very unequal, pale; inner one to three inner three-quarters of an inch long, stouter, red, quite horizontal or the upper erect. *Flower* two inches long by two and a half in diameter. *Perianth* funnel-shaped; tube one and a half inch long, densely clothed with short imbricating oblong scales with rounded tips, each crowned with a lanceolate scale and eight to ten slender red spines, all surrounded at the base by a tuft of long curly hairs. *Sepals* and *petals* together in several series, lanceolate acuminate, golden yellow. *Anthers* very small. *Stigmas* ten to twelve, erect, bright red.—*J. D. H.*

Fig. 1, Tuft of spines; 2, scale from tube of perianths; 3, stamens; 4, stigmas:—*all enlarged.*

M.S. del, J.N. Fitch lith.

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TAB. 6868.

ECHIUM CANDICANS.

Native of Madeira.

Nat. Ord. BORAGINEÆ.—Tribe BORAGEÆ.

Genus ECHIUM, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 863.)

ECHIUM *candicans;* fruticosum, cano-hirsutum v. virescens, caule elato robusto ramoso, ramis crassis apices versus foliosis, foliis caulinis pedalibus lanceolatis, infra-floralibus multo minoribus confertis subulato-lanceolatis erectis v. patentibus, panicula elongato-oblonga ramulis perplurimis gracilibus patulis, floribus sessilibus, sepalis linearibus subacutis, corollæ pallide azureæ lobis late ovatis obtusis, staminibus longe exsertis, stylo piloso ramis brevibus.

E. candicans, *Linn. f. Suppl. Pl.* p. 131; *Jacq. Collect.* vol. i. p. 44; *Ic. Pl. Rar.* vol. i. t. 30.

E. fastuosum, *Jacq. fil. Eclog.* t. 41, *not of Aiton.*

This noble plant belongs to a group of the genus, inhabiting Madeira and the Canary Islands, all the species of which are so imperfectly characterized that I am in great doubt as to the name it should bear. Of these species two or more appear to be variously described under the names of *E. candicans*, Jacq., *fastuosum*, Ait., *fastuosum*, Jacq. fil., *nervosum*, Ait., and *virescens*, DC. It is uncertain whether all are Madeiran or some only, or all or some Canarian also. All are founded on cultivated specimens. In the hope that by shortly giving their history and the characters attributed to them the attention of horticulturists may be directed to the subject, I shall here do so.

In 1781 the younger Linnæus published *E. candicans*, from specimens brought by Masson from Madeira; and in 1786 the elder Jacquin figured it from a young and imperfectly developed specimen with an unformed panicle of very pale blue flowers in the Schoenbrunn Gardens; adding in the description that after six years the plant becomes subarboreous and bears a much longer and broader panicle. In 1793 he more fully described it in his "Collectanea," erroneously giving Teneriffe (Masson) as the native country. He was followed by Aiton, who in 1789

describes it as introduced from Madeira in 1777; and so matters rested till 1810, when the new edition of "Hortus Kewensis" appeared, wherein are described the above-mentioned *E. candicans*, Jacq., *E. fastuosum*, Ait., from the Canaries (Masson), with a cylindric raceme and acute sepals, and *E. nervosum*, Ait., from Madeira (Masson, 1877), with ovate raceme and subobtuse sepals.

In 1811 the younger Jacquin in his "Eclogæ" figured, also under the name of *E. fastuosum*, a plant which he says appeared amongst the pots of *E. candicans* in the Schoenbrunn Gardens, and differs from it; but he does not say how. It is evidently not Aiton's *E. fastuosum*, having a large broad panicle of pale blue flowers.

De Candolle in 1813, in the Catalogue of the Montpellier Garden, has *candicans* as a Madeiran plant of Aiton's in the list (p. 25), but attributes it to Linn. fil. in his "Adnotationes" (p. 108), and describes it as having a spiciform panicle and intense blue-purple flowers. He also describes *E. virescens*, DC., from Teneriffe, to which he refers *E. candicans* of the elder Jacquin, but not of Linn. fil.; it too has a spiciform panicle and bright blue corollas with white lines at the base.

In 1815 an *E. candicans* is figured by Edwardes in the Botanical Register (vol. i. t. 44) with a compact cylindric spiciform panicle, and small bilabiate corollas with rounded lobes, the two upper small and blue, the three lower white.

Lehman, in his "Plant. Asperif." (1818), describes *candicans*, Linn. fil., Jacquin and Aiton, as a Madeiran plant with a conical panicle, oblong acute sepals and blue corolla; and *fastuosum*, Jacq. fil. (*candicans*, DC.), native country unknown, as differing from *candicans*, Linn. fil., in its broader more hirsute ciliate less white leaves, large ovate thyrse, dense spikelets and lanceolate sepals.

Webb in "Hist. Nat. Ins. Canaries" (1845?) retains *virescens*, DC., referring to it *E. candicans*, Jacq., and doubtfully, *E. fastuosum*, Jacq. fil.; he says it differs from *candicans*, Linn. fil., in the short subvelvety pubescence, and that it is found on the Mountains of Orotava only.

De Candolle in the Prodromus (1846) describes *candicans*, Linn. fil. and Jacq. Pl. Rar., with *virescens*, DC., as a synonym, as with a lax panicle and corollas white or blue with white lines; and *fastuosum*, Jacq. fil. Eclog. (with

nervosum, Ait., and *candicans*, DC. Cat. Hort. Monsp., as synonyms), as having a spiciform cylindric panicle and splendidly blue flowers, which is the reverse of Jacquin's character and figure.

Lastly Carriere figures, in the "Revue Horticole" (1876, p. 10), as the Madeiran *E. fastuosum*, Jacq., a plant with a dense spiciform cylindric panicle of the deepest gentian-blue corollas having broad short retuse lobes.

There are two other authorities for *E. candicans*, Lamarck's "Encycloped." t. 94, which is altogether bad and unrecognizable, and Savi's "Flora Italiana," vol. iii. t. 91, a work I have not seen.

Referring to Herbarium specimens, the counterpart of the plant here figured is from Madeira, named, apparently by Webb, (wrongly) "*E. nervosum*, Ait., *E. fastuosum*, DC. Prodr.," and there are other specimens both from Madeira and the Canaries named *candicans* and *virescens* differing very slightly, and chiefly in the more cylindric panicle. There are also specimens with the spiciform panicle of dense blue flowers named by Lowe *E. candicans*, from the Waterfall, alt. 3000 ft.

The plant here figured was received from Sir G. Macleay, and flowered, when three feet in height, in April, 1885. A very similar one has been long in cultivation in the Temperate House, but I am not aware of its origin; it forms a bush six feet high with an arboreous trunk and foliage of a green colour when fresh, but hoary-white when dry, and flowers in spring.—*J. D. H.*

Fig. 1, Reduced view of whole plant; 2, leaves, and 3, panicle of the natural size; 4, flower-bud; 5, stamens; 6, ovary:—*all enlarged.*

M.S. del, J.N. Fitch lith.

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TAB. 6869.

IRIS BARTONI.

Native of Affghanistan.

Nat. Ord. IRIDEÆ.—Tribe MORÆEÆ.

Genus IRIS, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

IRIS (*Pogoniris*) *Bartoni*; rhizomate carnoso breviter repente, foliis ensiformibus bipedalibus læte viridibus apice scariosis, pedunculo oligocephalo foliis subæquilongo, spathæ valvis exterioribus magnis divergentibus diutine viridibus, floribus 2–3-nis magnis albidis suaveolentibus breviter pedicellatis, ovario oblongo-trigono vix sulcato, perianthii tubo infundibulari viridulo pollicari, segmentis exterioribus obovatis unguiculatis infra medium reflexis barbâ elongata albo-aurantiaca decoratis venis facialibus luteo-viridibus inferioribus purpurascentibus, segmentis interioribus erectis exterioribus vix minoribus ungui angustiori purpureo venoso facie barbato, stigmatis cristis magnis deltoideis, antheris magnis albis.

I. Bartoni, *Foster in Gard. Chron.* N. S. vol. xix. p. 275 (1883).

This is a new species of the group of German Irises, for the introduction of which into cultivation we are indebted to Professor Michael Foster. Let me take the present opportunity of saying how glad I am that a biologist with his training and experience has made a speciality of the genus in the only way in which it is possible to investigate properly the relationship of the complicated series of forms to one another, by cultivating them side by side, and on this basis attempting to work out their life history and mutual affinities. It was procured in a garden at Kandahar, during the occupation of that city by our troops in 1880, and was sent home by Colonel Barton, after whom it was named, and who was informed by a native gardener that it was brought from a ditch not far distant. Of the well-known old European types it comes nearest to *I. florentina*, from which it differs in the colouring and veining of its perianth-segments, and especially in the claw of the inner segments being bearded, and in the very large divergent outer spathe-valves, which remain green for some time after the flowers have faded. Our drawing was made from specimens sent up by Mr. R. J. Lynch, from a plant grown

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in the Cambridge Botanic Garden. It flowers at the beginning of June.

DESCR. *Rhizome* thick and fleshy, resembling that of *I. florentina*. *Leaves* ensiform, pale green, a foot and a half long, one and a half or two inches broad, strongly ribbed, narrowed gradually to a scariose tip. *Peduncle* slightly overtopping the leaves, usually once forked. *Flowers* two or three in a cluster, creamy white, strongly scented; pedicels very short; outer spathe-valves oblong-navicular, four or four and a half inches long. *Ovary* oblong-trigonous, above an inch long; perianth-tube infundibuliform, greenish, an inch long; outer segments obovate, unguiculate, three and a half or four inches long, an inch and a half broad, reflexing from below the middle, the veins of the face greenish-yellow, of the claw violet-purple; beard extending considerably beyond the claw, the hairs of the upper part pure white, of the lower tipped with orange-yellow; inner segments erect, obovate-unguiculate, scarcely smaller than the outer, veined with purple and bearded down the face of the claw. *Crests* of the stigma large, deltoid, irregularly toothed on the outer margin. *Anthers* large, pure white.—*J. G. Baker*.

Fig. 1, Anther; 2, stigma, with its crests:—*both enlarged*.

M. S. del, J. N. Fitch lith.

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TAB. 6870.

CACCINIA GLAUCA.

Native of Persia and Affghanistan.

Nat. Ord. BORAGINEÆ.—Tribe BORAGEÆ.

Genus CACCINIA, *Savi;* (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 846.)

CACCINIA *glauca;* herba perennis, glauca, subcarnosa, sparse tuberculata, foliis breviter petiolatis elliptico-oblongis aculeolato-denticulatis, calycis floriferi segmentis oblongis denticulatis, corollæ tubo calyce paullo longiore, lobis oblongo-lanceolatis, antheris 3 minutis quarta multo majore lineari, calyce fructifero crasse pedicellato obconico, lobis denum late explanatis triangularibus, nuculis magnis disco planiusculis marginibus denticulatis.

C. glauca, *Savi Cos. Bot.* i. t. 1, *ex Alph. DC. Prodr.* x. 166; *Boiss. Fl. Orient.* iv. 277; *Gard. Chron.* 1883, ii. 173, fig. 27.

C. Celsii, *Boiss. Diagn.* Ser. i. 11. 133.

BORRAGO crassifolia, *Vent. Hort. Cels.* t. 100.

It is not without hesitation that I refer this singular-looking plant to *C. glauca*, from the description and plates of which it differs in the racemose inflorescence, the broader flowering calyx-lobes, and the much shorter corolla-tube and shorter broader corolla-lobes; but it seems nearer to that species than to any other, and Boissier describes *C. glauca* as varying in the length of the corolla-tube in relation to the calyx. The other species of the same section, of which four are described, all differ much more in various characters. The genus is a small one, confined to Western Asia, and extending from Armenia to Affghanistan. *C. glauca* is abundant in the latter country and in Northern Persia, ascending the mountains to 5000 feet. It has been cultivated in France ever since the beginning of this century.

The specimen here figured has for some years been cultivated at Kew; it flowered in the open air in the Royal Gardens in 1880, and has annually since.

DESCR. A glaucous, rather fleshy, pale, perennial-rooted herb, one to three feet high, branched from the base, erect, sparingly scabrid with distant tubercles or small prickles and pale depressed warts. *Stem* below as thick as the

thumb, terete, very smooth. *Leaves* four to eight inches long, shortly petioled, or the upper sessile, elliptic-oblong with rounded tips, sparsely tubercled, very pale green, margins with short prickle-like teeth, midrib very stout. *Flowers* in racemose cymes; bracts leafy. *Calyx-lobes* (in flower) oblong, greenish brown, margins everted, serrulate. *Corolla-tube* not exserted, lobes half an inch long, oblong-lanceolate, violet-blue, turning red. *Stamens* four, on the mouth of the corolla, three very small; fourth much larger, with a long narrow anther which is longer than the filament. *Fruiting* pedicels elongate, much thickened, echinate; fruiting calyx (before ripening) broadly obconic, one inch in diameter, lobes closing over the carpels with their margins everted, forming acutely-toothed wings.—*J. D. H.*

Fig. 1, Vertical section of flower, of *natural size;* 2, portion of corolla and two stamens; 3, stigma; 4, section of unripe nuculi:—*all enlarged.*

M.S. del, J.N. Fitch lith.

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TAB. 6871.

EOMECON CHIONANTHA.

Native of China.

Nat. Ord. PAPAVERACEÆ.—Tribe EUPAPAVEREÆ.

Genus EOMECON, *Hance in Journ. Bot.* vol. xxii. (1884) p. 376.

EOMECON *chionantha;* herba glaberrima, rhizomate perenni, succo croceo, foliis radicalibus longe petiolatis late cordiformibus sinuatis palmatinerviis subtus dealbatis, petiolo terete, scapis gracilibus elongatis apice ramosis, floribus 2 poll. diametr., pedicellis elongatis basi bracteatis, bracteis parvis lanceolatis, sepalis in spatham cymbiformem membranaceam caducam confluentibus, petalis 4 amplis albis, staminibus numerosis, ovario oblongo, stylo valido elongato, stigmate breviter 2-lobo lobis erectis, placentis 2 polyspermis, capsula stipitata a basi ad apicem 2-valvi, seminibus tuberculatis.

E. chionantha, *Hance l. c.* et vol. xiv. (1845) p. 255.

A beautiful monotypic genus of *Papaveraceæ*, intermediate, as its author Dr. Hance observes, between *Stylophorum* and *Sanguinaria*, differing from both in the scapose habit, racemose flowers, and sepals confluent in a membranous boat-shaped spathe, and further from *Stylophorum* in the form of the leaves and colour of the flowers; and from *Sanguinaria* in the four petals, elongate style, and stigmatic lobes alternating with the placentas. It was discovered by the Rev. B. C. Henry on the banks of rivers in the province of Kwangsi, to the westward of Canton, according to Dr. Hance, whose description of the fruit is given above. It is probably half hardy, having flowered in a frame in the Royal Gardens in September last, the plants having been sent by Mr. Ford, Superintendent of the Hong Kong Botanical Gardens, where it fruited in the spring of last year.

DESCR. *Rootstock* perennial, as thick as the fore-finger, creeping and ascending, clothed with the membranous bases of the sheaths of the petiole, abounding in yellow sap. *Leaves* all radical, long-petioled, three to six inches long, broadly cordiform with a very deep closed or open sinus, concave, thinly coriaceous, margin broadly sinuate,

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apex rounded; nerves one medial and three to five slender pair radiating from the top of the petiole; upper surface bright pale green, lower subglaucous; petiole six to eight inches long, slender, with a narrowly sheathing base. *Scape* a foot or more high, erect, terete, reddish, subpaniculately branched above; bracts at the base of the branches a quarter of an inch long, lanceolate, membranous. *Flowers* terminating the branches, erect, two inches in diameter; pedicel slender, one to two inches long; buds ovoid, acute, erect. *Sepals* combined into a boat-shaped membranous subacute caducous delicately-nerved green spathe. *Petals* four, nearly orbicular, pure white, concave, spreading, nerves very faint. *Stamens* numerous; anthers linear, yellow, as long as the slender filament. *Ovary* ovoid, with two opposite thick ribs, narrowed into a stout style with a two-lobed stigma, lobes erect; ovules very numerous, on two parietal placentas. *Capsule* oblong, stipitate, dehiscing from the base to the apex, the valves separating from the replum but remaining attached to it at the top. *Seeds* oblong, testa crustaceous, tubercled.—*J. D. H.*

Fig. 1, Calyx; 2, stamen; 3, ovary; 4, transverse section of ditto:—*all enlarged.*

M.S. del. J.N. Fitch lith.

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Tab. 6872.

VACCINIUM Mortinia.

Native of the Andes of Ecuador.

Nat. Ord. Vacciniaceæ.—Tribe Euvaccinieæ.

Genus Vaccinium, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 573.)

Vaccinium (Vitis idea) *Mortinia*; frutex ramosissimus, foliosus, ramulis pubescentibus, foliis ½-pollicaribus breviter petiolatis ovatis v. ovato-oblongis -lanceolatisve acutis cartilagineo-serrulatis epunctatis costa petiolisque puberulis, nervis obscuris, racemis axillaribus folio paulo longioribus, floribus congestis cernuis, calycis lobis late ovatis obtusis acutis acuminatisve, corolla rosea oblongo-urceolata 5-dentata, filamentis hirsutis antheris æquilongis, bacca globosa.

V. Mortinia, *Benth. Plant. Hartweg.* p. 221.

A native of the Andes of Ecuador and New Grenada, ascending to an elevation of 11,000 feet on Pichincha, where it was discovered by Hartweg when collecting for the Royal Horticultural Society, and has been subsequently collected by Spruce, Jameson and others. What appears to be the same plant has been gathered in the Cordillera of Peru by Lechler (No. 2213), and on the Sierra Nevada of Santa Martha in New Grenada by Purdie, who describes it as reaching the snow-line. It is known by the native name of *Mortina*, under which the fruit is brought to the market of Quito. Hartweg describes it as more acid than that of *V. Myrtillus*.

Like most of the Andean plants from great elevations, *V. Mortinia* is probably only half hardy. The plant cultivated at Kew was received from Mr. Max Leichtlin in 1884, and flowered in a cool greenhouse in April, 1885. From specimens in the Kew Herbarium, the late Mr. Isaac Anderson Henry seems also to have had it in cultivation in 1870, no doubt raised from seeds sent by his correspondent Dr. Jameson.

Descr. A small woody densely-branched leafy shrub, two to three feet high; branches pubescent with short hairs or nearly glabrous, the lower stout, upper slender.

Leaves rather crowded, one-half to three-quarters of an inch long, spreading and reflexed, oblong-ovate or -lanceolate or ovate, acute, very thickly coriaceous with cartilaginous subserrate margins, convex when dry, with recurved margins, not punctate beneath; petiole very short and midrib above towards the base usually puberulous, nerves very obscure. *Flowers* in very short drooping racemes, crowded, shortly pedicelled; pedicels with two small opposite concave ovate bracteoles. *Calyx-tube* short; lobes broadly ovate, obtuse acute or acuminate. *Corolla* one-third of an inch long, rose-pink; tube cylindric-oblong or -urceolate, terete, quite glabrous, not ribbed; teeth five, small, recurved. *Stamens* wholly included, filaments slender as long as the anthers, hirsute with long hairs; anther-tubes as long as the cells, which latter are very membranous and dehisce along the margins exposing the pollen. *Fruit* like that of the *V. Myrtillus*, acid.—*J. D. H.*

Fig. 1, Leaf; 2, flower; 3 and 4, stamens; 5, ovary; 6, transverse section of ditto:—*all enlarged.*

M. S. del. J. N. Fitch lith.

Vincent Brooks Day & Son Imp.

TAB. 6873.

TRICHOSANTHES PALMATA.

Native of India.

Nat. Ord. CUCURBITACEÆ.—Tribe CUCUMERINEÆ.

Genus TRICHOSANTHES, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 821.)

TRICHOSANTHES *palmata*; herba alte scandens, glabra pubescens v. ramulis foliisque minute tuberculata, caule angulato, foliis petiolatis palmatim 5–7-lobatis v. -angulatis dentatis, angulis lobisve acutis v. obtusis sinubus interdum profundis, floribus masculis amplis albis in racemum elongatum dispositis, bracteis magnis vaginantibus ovatis obovatisve basi angustatis integris serratis v. fimbriatis, sepalis dentatis serratis laceratis v. subpinnatifidis, corollæ segmentis cuneatis margine exteriore fimbriato, fructu globoso rubro aureo fasciato, seminibus numerosis oblongis marginibus obtusis.

T. palmata, *Roxb. Fl. Ind.* vol. iii. p. 704; *Wight and Arn. Prodr.* p. 350; *Wight Ill. Pl. Ind. Or.* t. 104, 105; *Dalz. and Gibs. Bomb. Fl.* p. 103; *Clarke in Fl. Brit. Ind.* vol. ii. p. 606.

T. laciniosa, *Wall. Cat.* 6689.

T. tricuspis, *Miquel Fl. Ind. Bat.* vol. i. pt. 1, p. 679.

T. bracteata, *Kurz in Journ. As. Soc. Beng.* 1877, pt. 2, p. 99.

INVOLUCRARIA Wallichii, *Seringe in DC. Prodr.* vol. iii. p. 318.

It is remarkable that this, which is one of the commonest and most conspicuous plants of India, should not have been figured in any work devoted to garden plants; and this though its seeds, like others of the family to which it belongs, long retain their vitality, and are certain to germinate, and though its culture is easy, its foliage striking, and its scarlet fruit with golden stripes as conspicuous and beautiful as are its snow-white flowers, fringed like a parasol, with filaments of exquisite delicacy. It has been grown at Kew at various times within the last twenty years, but as it is not included in the second edition of Aiton's "Hortus Kewensis" (published in 1813), it must be regarded as a comparatively modern introduction.

According to Mr. Clarke, who monographed the *Cucurbitaceæ* of India for the "Flora of British India," *T. palmata* is a very variable plant, having large acutely angular glabrous leaves and large flowers with long fimbriæ

to the corolla in moist woods, but much smaller deeply-lobed leaves covered with minute warts on both surfaces, and smaller flowers with shorter fimbriæ in drier and more open places. There is further great variation in the form size and cutting of the bracts, in the number of male flowers in a raceme, and in the form and cutting of the sepals, which are sometimes entire ovate-lanceolate and acuminate, at others toothed or serrate, or, as in the form here figured, dilated and pinnatifidly lacerate. Lastly the whole plant may be glabrous or more or less pubescent. Amid all these variations, however, the fruit and seeds are, as far as is known, constant in form, size, colour, and all other characters.

T. palmata occurs all over India, from the Western Himalaya eastward to Assam, and southward to Malabar, Ceylon and Singapore; it is also a native of the Malay Archipelago, China, Japan and North Australia. The Kew plants were raised from seeds sent from the Calcutta Botanical Gardens, which flowered in the Water-lily House in March, 1882. The flowers open in the evening, for one night only, and are sweet-scented. The following description applies to the large forest form here figured.

Descr. A tall glabrous rambling climber, with long angular branches, which hang down for many feet from the branches of forest trees. *Leaves* four to eight inches long and broad, membranous, broadly ovate, palmately five- to seven-angled, tip and angles acuminate, bright green above with sunk nerves; petiole stout, two to four inches long; tendrils stout, two-fid or three-fid. *Flowers* diœcious, male in stoutly-peduncled axillary racemes three to six inches long, solitary, or rarely with a smaller few-flowered second; female fl. solitary, axillary. *Bracts* one and a half inch long or less, ovate, boat-shaped and sheathing, often bearing large black glands. *Calyx-tube* short; lobes lacerate, spreading. *Corolla* four inches in diameter excluding the fimbriæ, pure white. *Fruit* globose, one and a quarter to two inches in diameter, scarlet with ten orange stripes. *Seeds* very many, nearly one-third of an inch long, imbedded in green pulp.—*J. D. H.*

Fig. 1, Calyx; 2, anthers:—*both enlarged.*

M S. del. J N Fitch lith

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Tab. 6874.

GENTIANA Bigelovii.

Native of New Mexico.

Nat. Ord. Gentianeæ.—Tribe Swertieæ.

Genus Gentiana, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 815.)

Gentiana (Pneumonanthe) *Bigelovii;* caulibus e radice perennante adscendentibus pedalibus teretibus foliosis subscaberulis, foliis sessilibus lineari-oblongis obtusis v. subacutis coriaceis 1-nerviis supremis flores longe superantibus, floribus axillaribus in spicas foliosas elongatas dispositis, calycis scaberuli lobis 5 angustis tubo cylindraceo tereti paullo brevioribus, corollæ violaceæ tubo cylindraceo lobis brevibus ovatis subacutis erecto-patentibus dorso lineis crenulatis in tubum decurrentibus notatis, lobulis accessoriis bipartitis segmentis subulatis, antheris cordatis, capsulæ stipite brevi fistuloso, seminibus anguste alatis.

G. Bigelovii, *Gray in Proc. Amer. Acad.* vol. xix. p. 86; *Synopt. Fl. of N. Am., Gamopet.* p. 406.

G. affinis, *Torr. Bot. Mex. Bound.* p. 157.

Dr. Gray, the author of this species, remarks that it had long passed as an extreme form of *G. affinis*, but that "it decisively differs by its oblong rather than funnel-form corolla with shorter lobes, and by the salient crenulate or roughened ridges which in the bud externally border the infolded plicæ; the stipe (of the capsule) is shorter and broader, and completely fistulous, so that some of the seeds fall into it—even to the bottom." The two species are indeed very near, and meet (if they do not cross) at the limits of their areas of distribution in Colorado. Our numerous specimens of *affine* may, however, be distinguished at first sight by the shorter and comparatively broader leaves, especially the floral ones, the usually more capitate inflorescence (though in some forms this is spicate), and the upper leaves rarely exceeding the flowers. The crenulate ridges on the corolla externally seem to afford a very constant character in *G. Bigelovii*, as does the stipes of the capsule. In the form of the corolla and length of its lobes I recognize no material difference between the two. *G. affinis* varies much in the size and

breadth of corolla, and that of the cultivated specimens of *G. Bigelovii* is larger than in native ones.

G. Bigelovii is a native of the Rocky Mountains from Colorado to New Mexico and Arizona, in the latter country ascending to 9000 feet. The plants from which our figure was made were raised from seed sent by Dr. Parry some years ago; it flowers in the rock-garden in August annually, being perfectly hardy.

DESCR. *Rootstock* stout, woody, giving off ascending simple terete subscaberulous purplish-green stems, twelve to sixteen inches high and leafy to the top. *Leaves* crowded, one to two inches long, sessile, spreading and recurved, linear-oblong or the upper quite linear, obtuse or subacute, coriaceous, one-nerved, margin obscurely scabrid, lower shorter broader, upper exceeding the flowers. *Flowers* axillary, sessile, forming a leafy spike; bracteoles linear. *Calyx-tube* cylindric, terete, red-purple; lobes very narrow, erect, linear or subulate, rather shorter than the tube, reaching about the middle of the corolla-tube, scaberulous. *Corolla* about one inch long, violet, tube cylindric funnel-shaped, much longer than the short broadly ovate obtuse or acute erecto-patent lobes, which are marked on the back with two crenulate ridges that run down the upper part of the tube; accessory lobules bipartite; segments subulate, half the length of lobes. *Filaments* flattened except towards the tip; anthers short, cordate. *Ovary* turgid in the middle, narrowed upwards to the obscure stigmas. *Capsule* on a short stout hollow stipes. *Seeds* minute, oblong, flattened with a narrow wing.—*J. D. H.*

Fig. 1, Calyx and bracteoles; 2, portion of corolla laid open; 3, stamen; 4, ovary:—*all enlarged.*

M. S. del. J. H. Fitch, 14h.

Vincent Brooks Day & Son Imp.

Tab. 6875.

HÆMANTHUS Baurii.

Native of Kaffraria.

Nat. Ord. Amaryllideæ.—Tribe Amaryllieæ.

Genus Hæmanthus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 730.)

Hæmanthus (Diacles) *Baurii*; bulbo oblongo compresso tunicis crassis truncatis viridibus, foliis 2 patulis orbicularibus facie glabris margine ciliatis, pedunculo brevissimo occulto, umbello denso multifloro pedicellis brevissimis vel subnullis, bracteis exterioribus obovato-cuneatis membranaceis albidis imbricatis pubescentibus floribus longioribus, perianthio albo tubo subcylindrico, segmentis oblanceolatis tubo longioribus, staminibus segmentis æquilongis antheris parvis oblongis citrinis, stylo apice stigmatoso tricuspidato.

This is one of those curious dwarf fleshy-leaved Hæmanthi which are one of the many strange botanical types characteristic of the interior sterile regions of Cape Colony. It has not yet been published or described, but we received dried specimens as long ago as 1874 from its discoverer, the Rev. R. Baur, a Moravian missionary, who during the last twenty years has added greatly to our knowledge of the botany of Kaffraria. He collected it at Shawbury, in Transkeian Kaffraria, at an elevation of 1500 feet above sea-level, flowering in June. Now through Professor Macowan it has been introduced in a living state, and our drawing was made from a plant that flowered at Kew in November, 1885. It is allied to the well-known *H. albiflos* of Jacquin, to *H. deformis*, Hook. fil. in Bot. Mag. t. 5903, and to *H. Arnottii*, Baker in "Gard. Chron." N. S. vol. x. p. 492. We have also a specimen received from the late Mr. Wilson Saunders, F.R.S., in 1873.

Descr. *Bulb* oblong, compressed, three or four inches the long diameter; tunics thick, green, truncate. Produced *leaves* two, contemporary with the flowers, fleshy, spreading, suborbicular, about half a foot long, and seven or eight inches broad when fully developed, glabrous on the surface, persistently ciliated on the margin. *Peduncle* very short, compressed, glabrous, hidden by the base of

the leaves. *Umbel* dense, many-flowered, about two inches in diameter; pedicels at most very short; outer bracts obovate-cuneate, membranous, pubescent, white with a slight green tinge, much imbricated, truncate or emarginate. *Ovary* oblong, green. *Perianth* pure white, above an inch long; tube subcylindrical, shorter than the oblanceolate segments. *Stamens* as long as the perianth-segments; anthers small, oblong, lemon-yellow. *Style* minutely tricuspidate at the apex.—*J. G. Baker.*

Fig. 1, A flower; 2 and 3, stamens; 4, pistil; 5, apex of style; 6, horizontal section of ovary:—*all more or less enlarged.*

M.S del. J.N Fitch lith.

Vincent Brooks Day & Son Imp.

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Tab. 6876.

CYPRIPEDIUM Godefroyæ.

Native of Siam.

Nat. Ord. Orchideæ.—Tribe Cypripedieæ.

Genus Cypripedium, *Linn;* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 634.)

Cypripedium *Godefroyæ;* humile, foliis 6–8 glabris omnibus radicalibus distichis patenti-recurvis coriaceis lineari-oblongis acutis obtusis v. apice subbidentatis, supra læte viridibus albo irroratis, subtus luride purpureis virescenti-irroratis, scapis brevissimis 1–2-floris ovarioque tomentosis, bractea cucullata foliacea, floribus albis purpureo-punctatis, sepalo dorsali rotundato-cordiformi puberulo obtuso, lateralibus in laminam oblongam dorso villosam sepalo dorsali multo minorem confluentibus, petalis latissime ovato-oblongis obtusis sepalo dorsali majoribus, labello subcylindraceo ore subcontracto, staminodio punctato parvo oblongo-quadrato apice 3 dentato.

C. Godefroyæ, *Godefr. Lebœuf, Orchidophile*, No. 31, t. 830; *Moore, Florist and Pomologist*, 1884, 37, *with fig.; The Garden*, vol. xxv. p. 396 with fig.; *Warner and Williams, Orchid. Album*, vol. iv. t. 177; *D'Ancona in Bull. Soc. Tosc. Ortic.* 1884, 168, t. 8; *Gard. Chron.* 1884, vol. i. p. 146, and 1885, vol. i. p. 49, fig. 11.

A member of the same group of species of the genus as that to which *C. concolor* (Tab. 5513) and *C. niveum* (Tab. 5922) belong, and in some respects, as pointed out by Dr. Moore in the "Florist and Pomologist," it is intermediate between those plants, having the white flowers of the latter, and the dwarf habit, bract and leaves more like *C. concolor*. It is, indeed, very closely allied to the latter plant, of which it has exactly the habit, but differs in the leaves not being barred with black and green above, or uniformly purple beneath, and in the smaller flower not being yellow, and having broader shorter sepals and petals copiously spotted with chocolate purple or brown, and in the staminode being three-toothed at the tip. Dr. Moore compared the staminode to that of *niveum*, but I think he must have meant *concolor;* for in *niveum* that organ is very large and broad, transversely oblong, and is much larger than the mouth of the lip above which it is raised, whereas in *C. concolor* and *Godefroyæ* it is much smaller than the mouth of the tip and more oblong. *C. Godefroyæ* is a native of calcareous

rocks in Siam, as its two allies are of like situations in Burma; it was introduced by Mr. Godefroy Lebœuf of Argenteuil, who named it in compliment to his wife, and it has flowered first in his and subsequently in other collections. Our plant was received in 1884 from Mr. Alabaster, when in charge of the public gardens of Bankok in Siam, who procured it from the Birds' Nest Islands in 1884, and it flowered in September of the following year.

DESCR. *Stem* very short, clothed with three to four pairs of equitant horizontally spreading leaves, and throwing up very short stout one-flowered scapes. *Leaves* glabrous, four to six inches long, linear-oblong, obtuse acute or obscurely two-fid at the tip, keeled beneath by the midrib, which is sunk above. Upper surface dark green mottled with pale greenish-white, lower densely spotted with rich red-brown, the spots becoming confluent. *Scape* one-half to one inch high, stout, tomentose, spotted like the leaves beneath; bract very broad, about half an inch long, complicate, coloured like the leaves. *Ovary* three-quarters of an inch long, villous with red-brown hairs. *Perianth* about two inches in diameter, white with dark and pale rounded spots of red purple or chocolate red. *Dorsal* sepal erect, concave, very broadly ovate, obtuse, faintly pubescent on both surfaces; lateral sepals confluent into a much smaller elliptic villous blade behind the lip. *Petals* much larger than the dorsal sepal, orbicular-oblong. *Lip* nearly one inch long, cylindric, faintly and minutely spotted, base rounded, mouth hardly dilated. *Staminode* much smaller than the mouth of the lip, subquadrately oblong, spotted, tip trifid.—*J. D. H.*

Fig. 1, Staminode and stigma:—*enlarged.*

1.

2.

3

M. B. del. J. N. Fitch lith.

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TAB. 6877.

HOYA GRIFFITHII.

Native of Eastern Bengal.

Nat. Ord. ASCLEPIADEÆ.—Tribe MARSDENIEÆ.

Genus HOYA, *Brown*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 776.)

HOYA (Euhoya) *Griffithii*; frutex glaberrimus, scandens, ramis elongatis flexuosis teretibus, foliis 6–9-pollicaribus per paria distantibus breviter petiolatis oblongo-lanceolatis oblanceolatisve acutis acuminatisve crasse coriaceis, costa crassiuscula, nervis tenuissimis patentibus obscuris, pedunculis axillaribus crassis elongatis, umbellis multifloris, pedicellis pollicaribus crassis, floribus 1–1¼-poll. diam., sepalis lineari-oblongis obtusis crassis, corollæ sordide roseæ lobis crassis triangulari-ovatis dorso concavis intus glabris, coronæ processubus magnis ambitu hemisphericis faciebus planis in spinas obtusas stigma superantes productis.

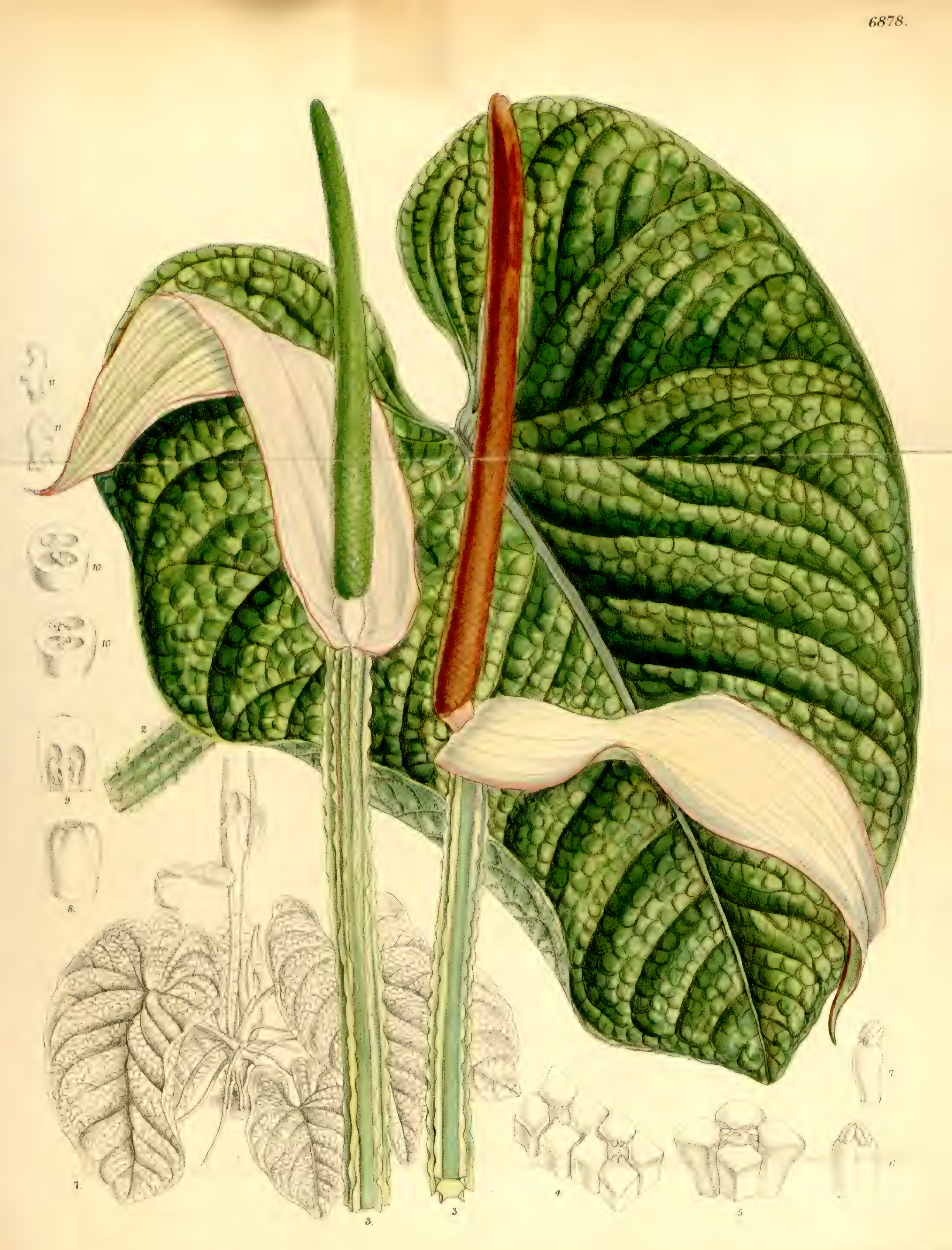
H. Griffithii, *Hook. f. Fl. Brit. Ind.* vol. iv. p. 59; *N. E. Brown in Gard. Chron.* 1885, vol. ii. p. 334, fig. 74.

This noble species of Hoya was discovered by the indefatigable Indian botanist and collector, Dr. W. Griffith, in the Khasia Mountains of Eastern Bengal, between Assam and Silhet, upwards of half a century ago; and it was again gathered there by Dr. Thomson and myself in 1850, near Nowgong, at an elevation between 2000 and 4000 feet above the sea. It is a near ally of the still nobler *H. imperialis*, Lindl., of Malacca, figured at Tab. 3397 of this work. A still nearer ally is the beautiful *H. coronaria*, Blume, a hitherto unfigured species of Malacca and Penang, which has pubescent leaves and flowers. Flowering specimens of *H. Griffithii* were sent to Kew by Mr. Swan, of Oakley, Fallowfield, near Manchester, in July last, with the information that the plant had been at Oakley about ten years. Mr. Swan states that it came from Northern India, and was originally sent to his employer, W. Leech, Esq. It is, of course, a stove plant, and as such well worthy of cultivation.

DESCR. A tall quite glabrous climber. *Stem* slender, terete, flexuous. *Leaves* in distant pairs, four to ten inches long, very shortly petioled, elliptic- or oblong-lanceolate

or oblanceolate, acute or acuminate, thickly coriaceous, bright green above, paler beneath; midrib rather stout; nerves slender, very obscure, horizontally spreading and loosely anastomosing; petiole stout, one-sixth to one-third of an inch long. *Flowers* one to one and a half inch in diameter, numerous, umbelled on a stout axillary peduncle two to three inches long; pedicels long, stout, one to one and a half inches long. *Sepals* much larger in proportion to the corolla than usual in the genus, oblong, obtuse, thickly coriaceous. *Corolla* quite glabrous, pale rather dull rose-red (the colour of blotting-paper externally) with yellowish edges; paler and yellowish within, with three faint pink stripes on each segment. *Segments* triangular-ovate, acute, thickly coriaceous, concave behind. *Corona* large, with five hemispheric lobes; these lobes have the convex surface downwards and longitudinally cleft, the flat surface upwards and produced inwards into a short ascending spine which reaches and rises above the stigma.—*J. D. H.*

Fig. 1, Calyx and unopened corolla; 2, corona and base of corolla; 3, pollen-masses:—*all enlarged.*



M.S. del J.N. Fitch lith

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TAB. 6878.

ANTHURIUM SPLENDIDUM.

Native of New Grenada.

Nat. Ord. AROIDEÆ.—Tribe ORONTIEÆ.

Genus ANTHURIUM, *Schott;* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 998.)

ANTHURIUM *splendidum;* subacaule, foliis amplis late ovato-cordatis sinu profundo acutis obtusisve supra læte glauco-viridibus creberrime bullatis nervis nervulisque impressis subtus papillosis pallidioribus, basi 7-nerviis, nervis lateralibus 8–10 arcuatis, petiolo pedunculoque crassis 6–7-alatis, alis creberrime undulatis, pedunculo valido, spatha lanceolata reflexa rosea demum alba marginibus roseis, spadice breviter stipitata elongata erecta obtusa demum aurantiaca, floribus dense compactis, perianthii foliosis 4 pentagonis late truncatis, staminibus inclusis, filamentis latis crassis, antheris parvis, ovario breviter columnari terete vertice rotundato 2-loculari, loculis 1-ovulatis, ovulis septo affixis sigmoideis.

A. splendidum, *Hort. Bull. in Gard. Chron.* vol. xix. (1883), p. 381, f. 58, and *N. E. Brown, l. c.* vol. xxi. (1884), p. 108; *Regel Gartenfl.* vol. xxxiii. (1884), pp. 145 and 146, *Ic. xylog.; Rodigas in L'Ill. Horticole,* vol. xxxi. (1884), p. 13, t. 510.

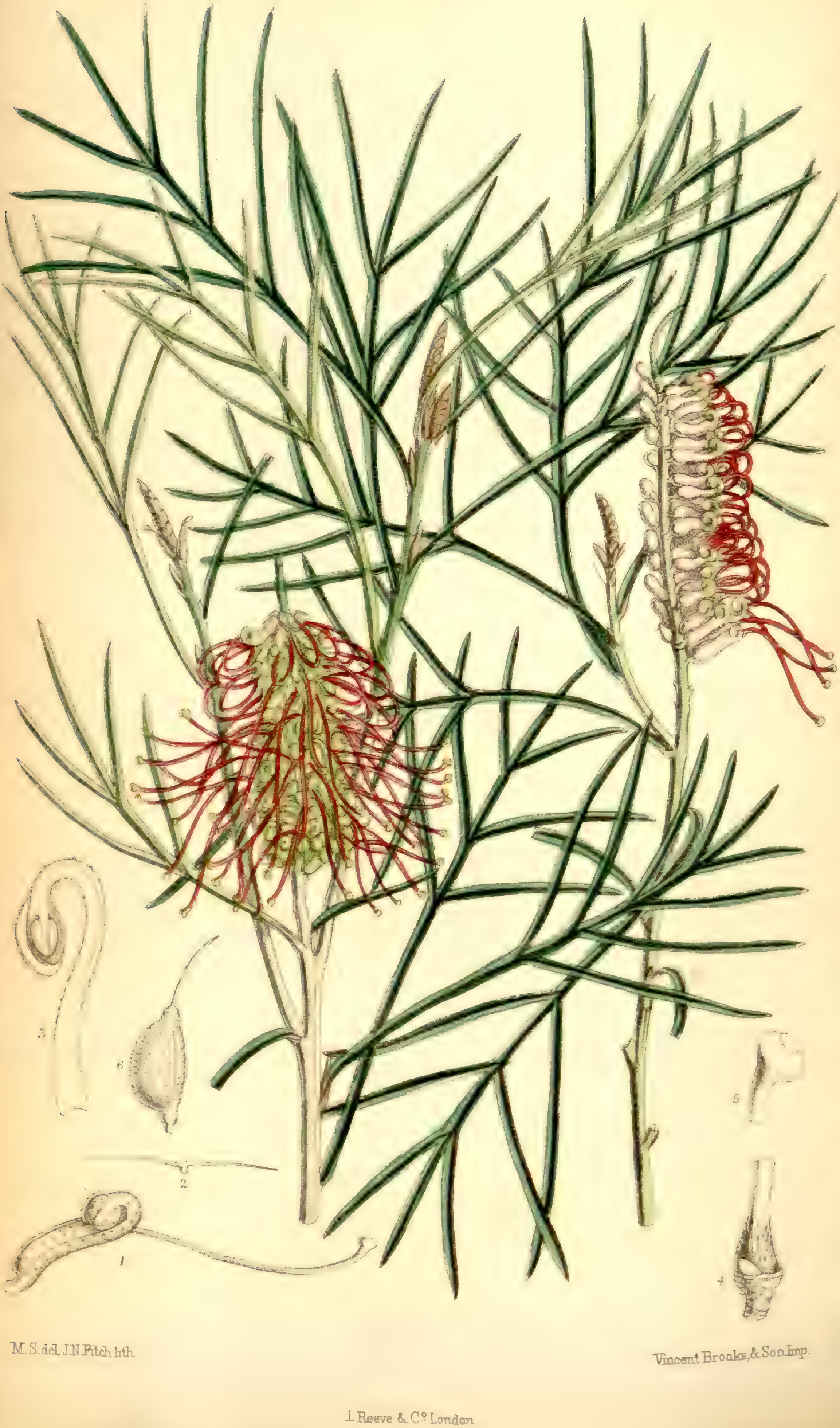
This truly splendid plant was introduced by Mr. Bull from New Grenada in 1882, and the figure here given is from a specimen liberally presented to the Royal Gardens by that energetic and successful horticulturist. Mr. N. E. Brown, who has kindly superintended the analyses given on the plate, informs me that its nearest affinities in the genus are not clear to him, though the general resemblance of the plant is that of *A. Scherzerianum* (Tab. 5319), and of *A. Glaziovii* (Tab. 6833). The colour of the leaves is a metallic green above, with the lustre of shot-silk; the spadix is at first green, then orange-yellow, and lastly brick-red. The spathe is at first very pale rose-coloured within with scarlet edges, but in age the rosy blush disappears. The crisped wings of the petiole and peduncle are very striking characters.

The specimen here figured is an unusually fine one, and the plant requires great heat and moisture to bring it to perfection. It flowered in the Royal Gardens.

DESCR. *Stem* or rootstock very short, sending out stout long root-fibres. *Leaves* a foot long and less, broadly ovate-

cordate with a deep sinus which is often closed, obtuse or acute, rather coriaceous, above glabrous and bullately reticulate by the sunk nerves and nervules, metallic green, under-surface paler, with papillose nerves and nervules; midrib stout; basal nerves seven, spreading from the top of the petiole, lateral nerves from the midrib six to nine pairs, arching; petiole usually shorter than the blade, very stout, six- to seven-angled and winged, wings undulate or crisped. *Peduncles* much longer than the petioles, winged like these, stout, erect. *Spathe* six inches long, lanceolate from a rounded base, acuminate, reflexed, flat, white with red edges, faintly rose-coloured when first opened. *Spadix* erect, on a very short stout stalk, five to nine inches long by one-third of an inch in diameter, cylindric, obtuse, green, then yellow, and finally brick-red. *Flowers* densely crowded, depressed, together presenting a flat surface. *Perianth-segments* four, short, thick, five-angled, broadly truncate. *Stamens* four, included, filaments very broad and thick; anthers small, two-celled, with vertical slits. *Ovary* very shortly columnar, cylindric, top rounded, stigma obscure, cells two. *Ovules* one in each cell, sigmoid, attached by a broad ventral funicle to the septum.—*J. D. H.*

Fig. 1, Reduced view of whole plant; 2, leaf; 3, flowering peduncles, both of *the natural size;* 4 and 5, flowers; 6 and 7, stamens; 8, ovary; 9, vertical section of ditto; 10 and 11, transverse section of ditto; 11, ovules:—*all enlarged.*



M. S. del, J. N. Fitch lith.

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Tab. 6879.

GREVILLEA Hookeriana.

Native of Swan River.

Nat. Ord. Proteaceæ.—Tribe Grevilleæ.

Genus Grevillea, *Br.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 180.)

Grevillea (Hebegynæ) *Hookeriana*; fruticosa, erecta, ramis foliisque subtus cano-tomentosis, foliis demum glabris longe petiolatis pinnatis segmentis 3–9 anguste linearibus rigidis subacutis supra canaliculatis subtus ob margines recurvos costamque validam 2-canaliculatis, racemis spiciformibus densifloris erectis, floribus secundis, rachi villosa, perianthio subsericeo-villoso intus glabro tubo $\frac{1}{4}$ poll. longo infra medium inflato, limbo brevi revoluto, toro recto, glandula semiorbiculari, ovario villoso, stylo elongato, stigmate globoso vix obliquo.

G. Hookeriana, *Meissn. in Plant. Preiss.* vol. i. p. 546, and in *DC. Prodr.* vol. xiv. p. 374; *Benth. Fl. Austral.* vol. v. p. 432.

G. tetragonoloba, *Meissn. in DC. l. c.*

Western Australia abounds in handsome shrubs, suitable for conservatories, and amongst them the genus *Grevillea* affords a considerable contingent of ornamental species, as the volumes of this work prove, where no fewer than sixteen species have been figured, and about half that number have been illustrated in other works devoted to horticulture. Amongst these is the graceful *G. robusta*, which is perhaps the most widely-used "foliage plant" for table decoration that ever was introduced into Europe.

G. Hookeriana is a native of South-West Australia, growing in dry places along the coast, as near King George's Sound, at the Gardiner River, and at Doubtful Island bays. It was discovered by Preiss, and collected afterwards by Drummond and others. The specimen here figured was raised from seed communicated by W. R. Guilfoyle, F.L.S., Director of the Melbourne Botanical Gardens, which flowered in the Royal Gardens in January of the present year.

Descr. A tall branching rigid shrub, with hoary-tomentose branches and leaves beneath. *Leaves* four to six inches long, pinnate; pinnules three to nine pairs, distant,

one and a half to three inches long by one-eighth of an inch broad, linear, rigid, spreading, acute but not pungent, grooved above, with two channels beneath from the recurved margins not meeting the prominent midrib, glabrous above, beneath hoary-pubescent, at length glabrous; petiole one to three inches long, as broad as the leaflets, channelled above and winged with recurved margins like the leaves. *Racemes* two to three inches long, stout, erect, dense-flowered, shortly peduncled; peduncle and rachis tomentose. *Flowers* secund, villous, densely packed, very shortly pedicelled. *Perianth* one-third of an inch long, straw-coloured, inflated below the middle, limb reflexed with very short concave lobes. *Ovary* villous; gland semicircular; style one inch long, stout, bright red; stigma globose with a nearly terminal circular stigmatic surface. *Fruit* three-quarters of an inch long, gibbously or dimidiately oblong, pubescent, very shortly stipitate, subacute.—*J. D. H.*

Fig. 1, Flower; 2, hairs of branch; 3, perianth-segment; 4, ovary and gland; 5, stigma:—*all enlarged.*

M.S. del, J.N. Fitch lith

L. Reeve & C° London.

Tab. 6880.

SOPHRONITIS violacea.

Native of Brazil.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Sophronitis, *Lindl.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 535.)

Sophronitis *violacea*; pseudobulbis oblongo-ovoideis tunica alba striata tectis, foliis solitariis lineari-elongatis subacutis canaliculatis, scapo vaginato 1–2-floro, floribus roseis, sepalis petalisque oblongo-lanceolatis acutis, labello æquilongo rhombeo-obovato acuto nudo basi obscure bigibboso, columnæ alis magnis carnosis falcatis antheram superantibus truncatis.

S. violacea, *Lindl. Bot. Reg.* vol. xxvi. (1840), *Misc.* p. 18, No. 18; *Lindl. and Paxt. Fl. Gard.* vol. iii. p. 11, fig. 238; *Reichb. f. in Linnæa,* vol. xxxv. p. 245, *and in Walp. Ann.* vol. vi. p. 466.

This is unquestionably the *Sophronitis violacea* of Lindley, though the flowers are not always solitary, and are far from being of a violet colour, either in our fresh specimens, or in a Brazilian dried one collected in 1837, in which the petals have retained their colour. It is a very elegant little species, discovered by Gardner in the above-named year, who in a note says that he fouud it only once, and then as a single small tuft, on the trunk of a large tree. Lindley was the first to describe it, but very briefly, from a specimen flowered in 1847 by Mrs. Cannon, of Stratford Green. Reichenbach, in 1852, published a much fuller description in the Linnæa, from specimens sent by Regnell. He states that it is common on the Organ Mountains. Our specimens differ from his description in the more numerous (three to six) sheaths on the often two-flowered scape. Dr. Reichenbach adds that the labellum varies much in shape, from obtusely rhomboid to lanceolate and acute, or obovate and acute.

The specimen here figured flowered at Kew in February of the present year, and was presented to the Royal Gardens by Messrs. Veitch.

Descr. A small epiphyte, with a creeping slender rhizome. *Pseudo-bulbs* one-third to one and a quarter inch

long, ovoid and rounded at the base, or elliptic-oblong and subacute at both ends, clothed with a white sheath which is fluted in parallel lines. *Leaf* solitary, two to three inches long by a quarter to one-third of an inch broad, linear, acute, channelled above and keeled at the back, bright green above. *Scape* shorter than the leaves, one- to two-flowered, clothed with imbricating ovate-lanceolate acute or acuminate short coriaceous sheaths. *Flowers* one to one and a half inches in diameter, bright rose-coloured. *Sepals* and *petals* oblong-lanceolate, acute, the latter rather the narrowest. *Lip* about the length of the petals, rhombic-obovate, acute, flat with two obscure calli at the very base. *Column* blood-red; wings very fleshy, broad, falcate, rising above the anther and truncate at the apex.—*J. D. H.*

Fig. 1, Lip; 2, column, base of lip and top of ovary; 3, front view of column; 4, anther; 5, the same viewed in front; 6 and 7, pollen-masses:—*all enlarged.*

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Tab. 6881.

ROYDSIA SUAVEOLENS.

Native of the East Indies.

Nat. Ord. Capparideæ.—Tribe Capparæ.

Genus Roydsia, *Roxb.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 110.)

Roydsia *suaveolens*; frutex v. arbuscula ramis scandentibus, foliis breviter petiolatis oblongis v. oblongo-lanceolatis acutis v. abrupte acuminatis integerrimis glaberrimis, racemis axillaribus solitariis v. paniculatis pubescentibus, floribus flavis suaveolentibus, drupa globoso-ovoidea v. oblonga aurantiaca breviter stipitata, endocarpio lævi.

R. suaveolens, *Roxb. Cor. Pl.* vol. iii. p. 86, t. 289; *Fl. Ind.* vol. ii. p. 643; *Wall. Cat. Herb. Ind. Or.* No. 4200; *Griff. Notul.* vol. iv. p. 578; *Hook. f. Fl. Brit. Ind.* vol. i. p. 180.

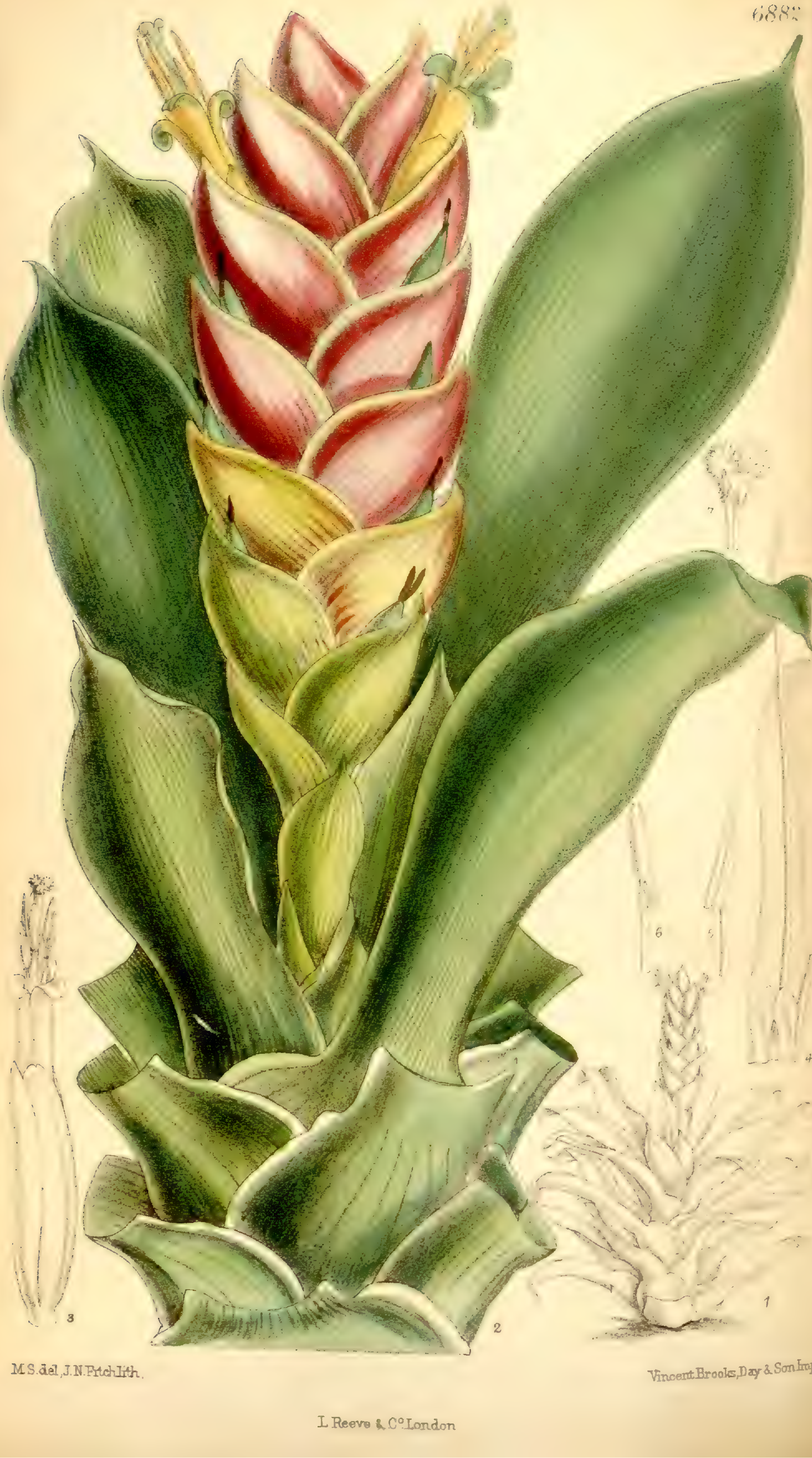
A frequent plant in the borders of tropical forests at the base of the Eastern Himalaya, from Sikkim to Upper Assam, and in similar situations in Assam, the Khasia Mountains and Munneypore, scenting the air when in flower with a delicious fragrance. The genus, which consists of very few tropical Asiatic species, differs remarkably from all others of the Caper family, to which it belongs, in the absence of petals, in the fruit being a drupe with a woody three-valved endocarp, in the three subulate styles, and in the three-celled ovary, which, however, becomes a one-celled fruit through the absorption of the placentas and the arrest of the development of numerous ovules.

Roydsia has been for many years cultivated at Kew, having been received from the Calcutta Botanical Gardens. It is excellently described by Dr. Roxburgh, who named the genus in compliment to "Sir John Royds, one of the Puisne Judges of the Supreme Court of Judicature of Bengal, and an eminent benefactor to the science." Though in its full-grown state rather a coarse rambling bush, ill suited for small houses, it is well worth cultivating for its fragrance by those who can give it space enough, the foliage being handsome, of a bright green, and persistent; and pot specimens flower freely, even small ones. The plant here

figured flowered at Kew in January of the present year, and specimens are flowering in the present month (May).

Descr. A woody shrub or small tree, with a stout stem and numerous rambling branches, that climb over forest trees; bark of branches glabrous or nearly so, red-brown, covered with white spots. *Leaves* alternate, four to twelve inches long, oblong or oblong-lanceolate, rarely oblanceolate, acute or acuminate, quite entire, bright green and shining, coriaceous, paler beneath; petiole one-third to half an inch long, terete. *Racemes* axillary or rather above the leaf-axils, solitary or in terminal panicles, three to seven inches long, erect or spreading, at length drooping; rachis stout, clothed to near the base with flowers; bracts small, tomentose. *Flowers* numerous, shortly stoutly pedicelled, three-fourths of an inch broad across the stamens, fragrant. *Calyx* of six pubescent oblong two-seriate spreading deciduous sepals. *Corolla* none. *Stamens* about one hundred, inserted on a globose receptacle, spreading; filaments slender, yellow; anthers small, oblong. *Ovary* ovoid, obscurely three-angled, pubescent, stalked, three-celled by the intrusion of three parietal placentas which are confluent in the axis of the ovary; style very short, with three erect subulate stigmas; ovules very numerous in the inner angles of the cells. *Drupe* one to one and a half inch long, broadly ellipsoid or oblong, shortly stipitate, orange-yellow with white specks; pulp soft, yellow; endocarp thin, smooth, but woody, splitting into three valves, one-seeded. *Seed* oblong; embryo erect; cotyledons very unequal, one larger deeply concave with the smaller in its concavity; radicle inferior, minute.—*J. D. H.*

Fig. 1, Bract and flower, with stamens removed; 2 and 3, stamens; 4, ovary and receptacle; 5, transverse section of ovary:—*all enlarged.*



M.S. del, J.N. Fitch lith.

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TAB. 6882.

TILLANDSIA (Vriesea) INFLATA.

Native of Brazil.

Nat. Ord. BROMELIACEÆ.—Tribe TILLANDSIEÆ.

Genus TILLANDSIA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 669.)

TILLANDSIA (Vriesea) *inflata*; acaulis, foliis 15–20 dense rosulatis oblanceolatis cuspidatis basi dilatatis utrinque viridibus glabris, pedunculo brevi erecto foliis bracteiformibus imbricatis occulto, floribus 10–12 alternis in spicam densam disticham dispositis, bracteis magnis ovato-navicularibus imbricatis superioribus splendide rubris luteo marginatis infimis viridibus, pedicellis subnullis, sepalis lanceolatis pallide luteis bracteis paulo brevioribus, petalis oblanceolatis luteis apice patulis viridulis basi squamis 2 semiadnatis appendiculatis, genitalibus exsertis, antheris linearibus leviter versatilibus, lobis stigmatosis orbicularibus patulis.

Vriesea psittacina, *var.* Truffantiana, *André in Journ. Soc. Nat. et Cent. Hort. France*, 1881, p. 87.

V. incurvata, *Morren in Belg. Hort.* vol. xxxii. (1882), p. 52, tab. 2, *non Gaudich.*

V. inflata, *Wawra Itin. Prin. Cob.* vol. i. p. 161; *Antoine Brom.* p. 28, t. 18.

V. carinata, *var.* inflata, *Wawra in Oester. Bot. Zeitschrift*, vol. xxx. (1883), p. 184.

This is one of the most showy of all the numerous Tillandsias of the subgenus *Vriesea* which have been brought into cultivation of late years. Of the older-known types it comes nearest to *T. psittacina*, Hook. (BOT. MAG. tab. 2841), but here the flowers are so close that the large bright-coloured bracts overwrap one another. It is a native of the woody coast region of the southern half of Brazil. It was introduced into cultivation by M. Binot in 1880, and was first flowered by M. Truffant at Versailles. Our drawing was made from a plant that flowered at Kew in December, 1885. Botanical science has lately sustained a heavy loss by the death within a short time of the two continental botanists who had specially devoted themselves to Bromeliaceæ, both of whom, as will be seen from the synonymy cited, had figured and described the present plant.

DESCR. Acaulescent. Produced *leaves* about twenty, forming a dense rosette, oblanceolate from an ovate dilated

base above two inches broad; lamina six or eight inches long, an inch and a half broad above the middle, deltoid and cuspidate at the apex, bright green and glabrous on both surfaces. *Peduncle* central, erect, three or four inches long, quite hidden by the imbricated bract-leaves. *Spike* simple, erect, distichous, five or six inches long, two inches broad; flowers ten or twelve; bracts ovate-navicular, an inch and a half long and broad, all except the lowest, which are greenish, bright red, with a narrow yellow border. *Calyx* nearly as long as the bract, pale yellow; sepals lanceolate. *Corolla* cylindrical, bright lemon-yellow, protruded half an inch beyond the bract; petals obtuse, with a spreading tip tinged with green, appendiculate at the base with two half-adnate scales. *Stamens* rather longer than the petals; anthers linear, slightly versatile; pollen bright yellow. *Pistil* a little longer than the stamens; stigmatic lobes orbicular, spreading.—*J. G. Baker*.

Fig. 1, Whole plant, *much reduced;* 2, whole plant; 3, a flower, *both life-size;* 4, a petal; 5, front view of anther; 6, back view of anther; 7, stigma:—*all enlarged.*

M.S. del, J.N. Fitch lith.

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Tab. 6883.

MYRMECODIA Beccarii.

Native of Tropical Australia.

Nat. Ord. Rubiaceæ.—Tribe Psychotrieæ.

Genus Myrmecodia, *Jack.* (*Beccari, Malesia*, vol. ii. p. 95.)

Myrmecodia *Beccarei;* tubere ecostato lobato spinuloso, spinulis brevibus simplicibus, ramis nodoso-incrassatis eclypeolatis, foliis oblanceolatis v. oblongo-oblanceolatis subacutis carnosis in petiolum semiteretem brevem crassum angustatis, floribus in alveolis ramorum nidulantibus, stipulis brevissimis in membranam 2-fidam tenuiter membranaceam fugacem connatis, bracteis obsoletis, calycis glabri limbo annulari, corollæ tubo cylindraceo lobis ovatis crassis longiore, staminibus parvis, filamentis antheras breves æquantibus, ovario 4-loculari, fructu cylindraceo-oblongo apice rotundata 4-pyreno.

The plant here figured is one of the most singular ever imported in a living state into this country, and it belongs to a genus, or rather to one of a group of genera of epiphytic *Rubiaceæ*, which have been long known from their singular habit of forming often spinous tubers of great size, the interior of which is galleried by ants of various species, and of which insects these are the native homes. To enter into any details of the history of these plants and their inhabitants would require a volume. I may, however, remark in respect of their history, that it affords one of the most striking instances known to me of the advance of botanical knowledge within so recent a period. In 1874, at the date of publication of the Genera Plantarum, our knowledge of the ant-nesting *Rubiaceæ* was that it consisted of two very imperfectly known genera, *Hydnophytum* and *Myrmecodia*, with four or six ill-characterized species between them; whereas in 1884 there appeared the splendid monograph of Signor Beccari, on "insect-nesting plants," in which he establishes four genera of Malayan ant-harbouring *Rubiaceæ*, with upwards of fifty species, many of them discovered by himself in the Malayan Archipelago and New Guinea. Signor Beccari's monograph, entitled *Piante ospitatrice*, forms two parts of a

quarto work dedicated (under the name of Malesia) to botanical observations on Malayan and Papuan plants, and of which these two parts occupy 212 pages, with fifty-four excellent plates. In them he describes various plants which are hosts for insects, of the orders *Myristiceæ*, *Euphorbiaceæ*, *Verbenaceæ*, *Leguminoseæ*, *Araliaceæ* and *Palmeæ*, but the bulk of the work is devoted to the four Rubiaceous genera, *Myrmecodia*, *Hydnophytum*, *Myrmephytum* and *Myrmedoma*, under which their botany and the economy of their growth, and of the insects they harbour, are described with a fulness and ability that are quite admirable.

Of *Myrmecodia* itself there are eighteen described species, besides the present one, of which details were sent to Dr. Beccari, who did not recognize it as any of those known to him: the genus extends from Sumatra and Singapore to New Guinea, North Australia, and the Solomon's Archipelago. Besides that here figured two species have been found in Torres Straits, *M. Antoinii*, Becc., and *M. Muellerii*, Becc., and no doubt more remain to be discovered in New Guinea and its neighbourhood. Living specimens of one or more species of *Myrmecodia* from North Australia have been received at Kew at various times, from the Botanical Gardens of Brisbane and Sydney, but after such protracted voyages that they have arrived in too weak a condition to survive long. For the plant here figured, the Royal Gardens are indebted to the liberality of Messrs. Veitch, who imported it from Brisbane in 1884, with the information that it was found in the Gulf of Carpentaria, and is extremely rare there: it came to Kew in January, 1886, in seeding condition, and flowered in the following February; it continues to flourish, as do seedling plants raised from its fruit, and now in June it is again in fruit. It requires great heat, and is treated like an epiphytic orchid. I have named it after the eminent botanist and traveller alluded to above.—*J. D. H.*

Figs. 1 to 4, Germinating and young plants; 5, flower; 6, corolla laid open; 7 and 8, front and back view of stamens; 9, ovary:—*all enlarged.*

1

2

Vincent Brooks Day & Son Lith

TAB. 6884.

ARISTOLOCHIA LONGIFOLIA.

Native of Hong Kong.

Nat. Ord. ARISTOLOCHIACEÆ.

Genus ARISTOLOCHIA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 123.)

ARISTOLOCHIA (Siphisia) *longifolia*; caule crasso deforme, ramis scandentibus gracilibus, inferne foliisque subtus breviter tomentosis, superne (foliisque junioribus) dense sericeo-villosis, foliis petiolatis e basi cordata v. rotundata elongato- lineari-lanceolatis longe tenuiter acuminatis, subtus inter nervos validos reticulatim venosis, floribus basin versus ramorum solitariis paucisve pedunculatis, pedunculo ovario perianthioque extus patentim villosis, perianthii refracti parte inferiore (sacculo) lineari-oblongo modice inflato costato superiore angustiore, limbo amplo suborbiculari 2-lobo intus glabro, columna obtuse 3-loba, antheris 6 per paria connatis.

A. longiflora, *Champ. in Hook. Kew Journ.* vol. vi. (1854) 116; *Benth. Fl. Hongk.* p. 333; *Duchartre in DC. Prodr.* vol. xv. pars. 1, p. 438.

A native of clefts of rock on Victoria Peak, in the Island of Hong Kong, where it was discovered by the late Col. Champion, when stationed on that island in 1847-50, and when by his active herborizations he added enormously to what had been made known of the Flora of that island by Mr. Hinds in 1841. It is to the exertions of these two gentlemen that Mr. Bentham owed the materials for the "Flora Hongkongensis," which was published under the authority of the Secretary of State for the Colonies in 1861.

A. longifolia is an ally of the Indian *A. saccata*, and is still nearer *A. Westlandi*, Hemsley, of China, the limb of the corolla of which is more than six inches in diameter, and clothed with long shaggy villous hairs. It was sent to Kew by Mr. Charles Ford, F.L.S., of the Botanical Gardens, Hong Kong, in 1882, and flowered in March of the present year. It requires no great heat, and succeeds best in a warm conservatory.

DESCR. *Stem* or *rootstock* short, woody, as thick as the thumb; branches several feet long, climbing, as thick as a goose-quill, below finely tomentose, silkily villous towards the tips. *Leaves* six to ten inches long by one to one and a

half broad, pendulous, coriaceous, narrowly linear-lanceolate from a rounded or cordate base, narrowed into a very fine acuminate point, glabrous above, finely tomentose beneath, more villous on the stout midrib and ten to fifteen pairs of arching nerves, strongly reticulate between the latter; petiole one-third of an inch long, stout, twisted. *Flowers* solitary or two together from towards the bases of the branches, pedicelled, pendulous, villous with spreading hairs externally, as are the stout flexuous pedicels. *Ovary* linear-oblong. *Perianth-tube* yellowish, faintly streaked with red-brown; saccate portion one and a half inches long, cylindric-oblong, moderately inflated; refracted portion of tube shorter, suddenly dilated into a maroon-brown nearly orbicular shallowly two-lobed glabrous limb two and a half inches in diameter, and mottled with reticulate darker nerves; mouth subquadrate and tube within bright yellow, with a few small purple specks. *Column* shortly stipitate, three-lobed; lobes obtuse, entire, fleshy, with recurved crenulate margins. *Anthers* six, in three pairs, cells linear-oblong.—*J. D. H.*

Fig. 1, Ovary and column viewed towards the back of one stigmatic lobe; 2, the same viewed towards the sinus between the lobes:—*both enlarged.*

M. Smith del. et lith.

Vincent Brooks Day & Son Imp.

L. Reeve & Co. London.

Tab. 6885.

GALTONIA clavata.

Native of Cape Colony.

Nat. Ord. Liliaceæ.—Tribe Scilleæ.

Genus Galtonia, *Decaisne;* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 809.)

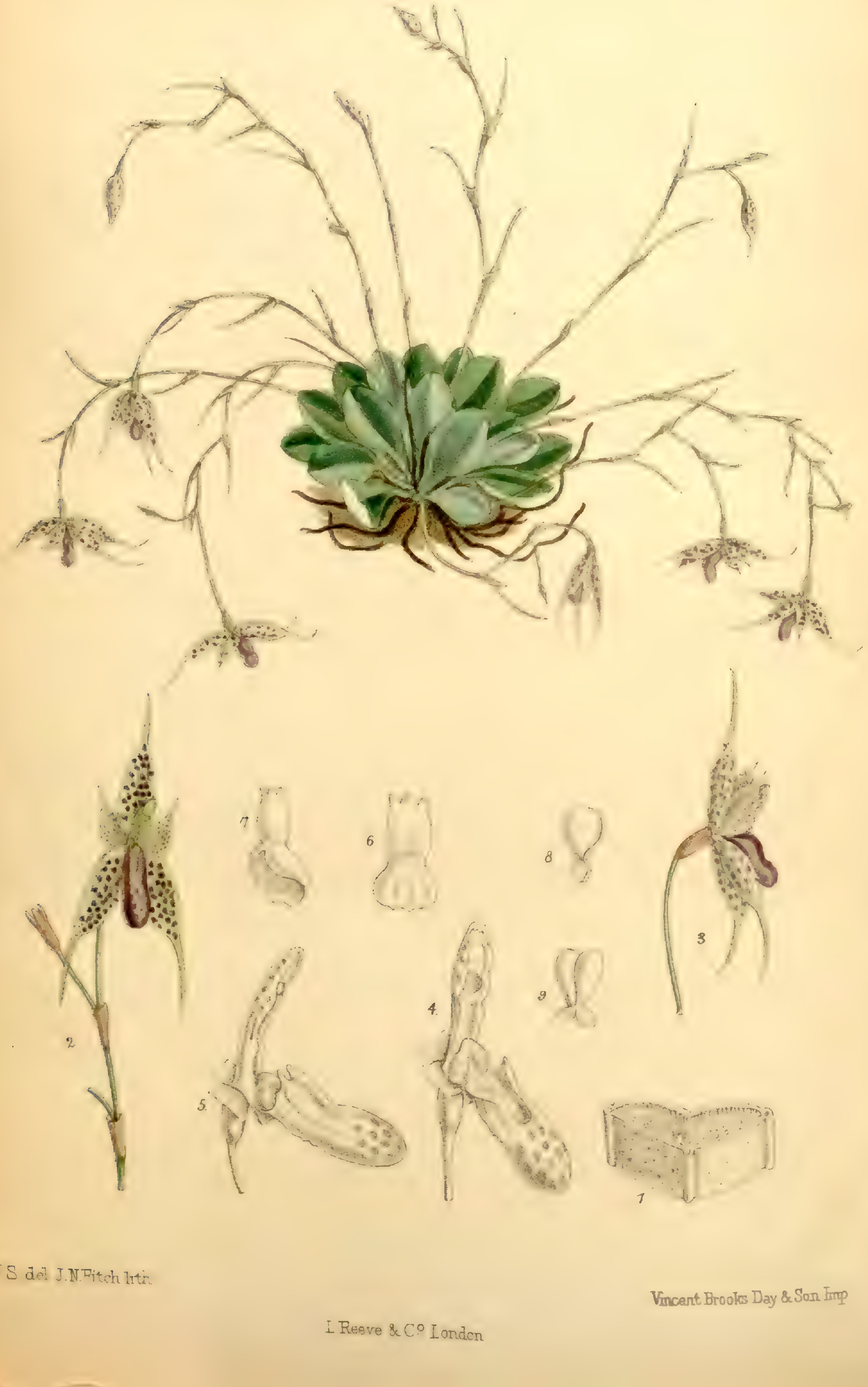
Galtonia *clavata;* bulbo ovoideo tunicis pluribus brunneis apice fibrillosis, foliis 6–8 sessilibus lanceolatis glabris glaucescentibus flaccidis bipedalibus, scapo valido tereti foliis subæquilongo, racemo laxo, pedicellis floriferis cernuis flore sæpe longioribus, bracteis lanceolatis membranaceis, perianthio viridulo tubo clavato, segmentis oblongis obtusis tubo duplo brevioribus, staminibus limbo æquilongis filamentis lanceolatis antheris lineari-oblongis, ovario oblongo-trigono sessili, stylo gracili ovario longiori apice stigmatoso minute trilobato.

This is a third species of *Galtonia*, hitherto undescribed, which differs from the two species already known by its shorter perianth-segments and lanceolate filaments. The genus, which differs from *Hyacinthus* mainly by its more numerous flattened seeds, was named by Decaisne in honour of our countryman, Francis Galton, F.R.S., the well-known traveller and anthropologist. We do not know the precise locality of the present plant, but presume it to be somewhere within the already ascertained area of the genus, which from Kaffraria extends northwards along the east side of Cape Colony through Natal to the Transvaal, always at such a considerable altitude above sea-level that the two species already known are hardy in England. It flowered at Kew in 1881, and the bulbs were received in 1879 from Mr. Charles Ayres of Cape Town. The flowers in shape resemble those of the tuberose, but have no scent, and altogether it is not so fine a plant from a horticultural point of view as the two species already known.

Descr. *Bulb* ovoid, three or four inches in diameter, with many dry brown outer tunics, splitting up at the top into copious persistent fibres. *Leaves* six or eight, contemporary with the flowers, sessile, lanceolate, glabrous, glaucous green, two feet long, one or two inches broad

below the middle, narrowed gradually to an acute point, furnished with a distinct pale margin. *Peduncle* terete, stiffly erect, as long as the leaves. *Flowers* scentless, greenish-white, arranged in a lax raceme; pedicels cernuous in the flowering stage, one or two inches long; bracts lanceolate, membranous, persistent. *Perianth-tube* clavate, about an inch long; segments oblong, obtuse, half as long as the tube, with several stripes of green down to the central third. *Stamens* inserted at the throat of the perianth-tube, as long as the segments; filaments lanceolate, pure white; anthers linear-oblong, versatile. *Ovary* oblong-trigonous, sessile; ovules superposed, crowded, horizontal; style slender, straight, longer than the ovary, obscurely three-lobed at the stigmatose apex. *Fruit* a large ovoid capsule.—*J. G. Baker.*

Fig. 1, Entire plant, ***much reduced in size;*** 2, half a flower, showing the stamens; 3, pistil complete; 4, horizontal section of the ovary :—*all more or less enlarged.*



M S del J.N.Fitch lith.

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Tab. 6886.

PLEUROTHALLIS Barberiana.

Native of Tropical South America.

Nat. Ord. Orchideæ.—Tribe Epidendreæ.

Genus Pleurothallis, *Br.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 488.)

Pleurothallis (Apodæ) *Barberiana;* pusilla, cæspitosa, acaulis, folio elliptico-obovato apice rotundato crasso subtrigono costa marginibusque anguste incrassatis supra medio canaliculata, basi acuta in petiolum gracillimum angustata, racemis solitariis capillaribus nutantibus plurifloris, floribus pendulis gracillime pedicellatis, bracteis tubulosis, sepalis ovato-oblongis purpureo-maculatis caudato-acuminatis subciliolatis, petalis multi-minoribus ovatis acuminatis serratis purpureo-punctatis, labello tereti lineari-oblongo sacciforme sed solido ante unguem 2-dentato purpureo, columna angusta immarginata postice carinata, anthera appendice 3-dentato coronata.

P. Barberiana, *Reichb. f. in Gard. Chron.* N.S. vol. xvi. (1881), p. 6.

There is no genus of Orchids so well deserving an illustrated monograph as *Pleurothallis*, for though wanting members of the gorgeous forms and colours that so many other genera of the order possess, it abounds in species of most singular habits, and of an infinite variety of forms of inflorescence and flowers, and the latter, though small, are often of gem-like beauty. They take up little space in the orchid-house, flower at various seasons, are easy of cultivation, and evergreen in foliage. If a fraction of the money spent by patrons of orchid culture on gorgeous duplicate plates of the better known fashionable orchids were devoted to illustrated monographs of such genera as this, *Stelis*, *Masdevallia*, *Restrepia*, *Bulbophyllum*, and their allies, a great service would be rendered to both horticulture and botany. As it is, the numbers of species of these plants that are imported to be lost or thrown away, because not showy or gaudy, is very great, and when the rage for orchid-growing is past, the loss of any record of them will be felt.

Pleurothallis Barberiana was first described by Dr. Reichenbach as "a lovely little thing, imported by Mr. Low, no doubt from tropical South America," and was, so

to say, "discovered" in their stoves by Mr. J. Barber, who was struck with the resemblance of the lip to that of a *Cypripedium*. Dr. Reichenbach further happily remarks, that it "belongs to the Zephyrean company of *P. macrochlepharis* and *P. balæniceps*."

For the specimen here figured the Royal Gardens are indebted to Messrs. Low. It flowers all summer.

Descr. A dwarf tufted stemless species. *Leaf* one-half to three-fourths of an inch long, elliptic-obovate, rounded at the tip, narrowed into a very slender petiole, flatly triangular on a cross section, which shows a prominent but slender thickening of keel and margins, that of the margins rather due to a narrow recurvation of the edge, and a mesial furrow on the face, bright green. *Racemes* many times longer than the leaves, subsolitary, capillary, drooping, six- to eight-flowered, but with rarely more than one flower open at a time; bracts brown, sheathing tubes, with a truncate mouth; pedicels very slender; flowers nearly one inch long from the tip of the dorsal to that of one of the lateral sepals. *Sepals* oblong-lanceolate, concave, white blotched with purple, suddenly contracted into a yellow tail almost as long as the limb. *Petals* not half the size of the sepals, ovate, white spotted minutely with purple, ending in a long yellow point. *Lip* a linear-oblong, terete, subclavate, solid body of purple colour blotched with deeper purple, rounded at the tip, and with two teeth opposite the very short claw. *Column* slender, yellowish, keeled behind. *Anther* a shallow cap, crowned with an oblong terete three-toothed appendage.—*J. D. H.*

Fig. 1, Transverse section of leaf; 2, portion of raceme and flower; 3, flower viewed sideways; 4, front, and 5, side view of flower with sepals and petals removed; 6 and 7, anther; 8 and 9, pollen-masses:—*all enlarged.*

M.S. del. J.N. Fitch. lith.

L. Reeve & Co. London.

Vincent Brooks Day & Son Imp.

Tab. 6887.

TULIPA Kaufmanniana.

Native of Turkestan.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Tulipa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 818.)

Tulipa *Kaufmanniana;* bulbo ovoideo, tunicis brunneis membranaceis intus parce adpresse strigosis, caule diphyllo unifloro, foliis oblongo-lanceolatis vel oblongis glaucescentibus glabris, pedunculo erecto obscure puberulo, perianthio magno subcampanulato versicolori (luteo, rubro vel albido) segmentis oblongis subobtusis subconformibus basi cuneatis ungue aurantiaco concolori, antheris linearibus magnis filamentis applanatis aurantiacis glabris æquilongis, ovario cylindrico-trigono stigmatibus magnis.

T. Kaufmanniana, *Regel Gartenfl.* vol. xxvi. (1877), p. 194, tab. 906, figs. 6–10; *Baker in Gard. Chron.* N.S. vol. xx. (1883), p. 71.

This is another of the fine new Tulips which have recently been discovered by the Russian explorers in Central Asia. It was found, since the date of the publication of the first part of the Flora of Turkestan (1876), by Dr. Albert Regel in the mountains that surround the river Tschirtschik, and was named in honour of General Von Kaufmann, the governor-general of the province. It is closely allied to *T. Gesneriana*, and is equally variable in colour, ranging through various shades of red and yellow to white. In all the specimens we have seen the claw of the segments is flushed with bright orange yellow, without any black line or encircling horseshoe-shaped mark. Dr. Regel has named two forms *albo-variegata* and *luteo-variegata*, of which he considers the former the type. In the plant from which his figure and description were made the pistil has evidently not attained its full development. Our plate was drawn from three plants flowered by Mr. Elwes at Cirencester early in the month of April of the present year.

Descr. *Bulb* ovoid, an inch in diameter; tunics brown, membranous, slightly hairy inside. *Stem* erect, one-flowered, under a foot long. *Leaves* usually two, oblong-

lanceolate or oblong, five or six inches long, an inch or an inch and a half broad at the middle, glaucescent, glabrous. *Peduncle* obscurely pubescent, about as long as the leaves. *Perianth* subcampanulate, two or two and a half inches long in the cultivated plant, yellow, red or white; segments subequal, oblong-cuneate, subobtuse, with a bright orange concolorous claw. *Stamens* an inch long; anthers linear, lemon-yellow; filaments bright orange, glabrous, flattened. *Ovary* cylindrical-trigonous, nearly an inch long; stigmas large, suborbicular, undulated.—*J. G. Baker.*

Figs. 1 and 2, Segments of the perianth, from two different flowers, *life-size*; 3, a stamen; 4, pistil:—*both enlarged.*

M. S. del. J. N. Fitch lith.

Ann. Mag. Nat. Hist. 2nd ser. vol. xvii. imp.

Tab. 6888.

RANUNCULUS LYALLII.

Native of New Zealand.

Nat. Ord. Ranunculaceæ.—Tribe Ranunculeæ.

Genus Ranunculus, *Linn;* (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 5.)

Ranunculus *Lyallii;* elatus, robustus, foliis radicalibus longe petiolatis crasse coriaceis orbicularibus peltatis crenatis, caulinis sessilibus reniformibus supremis cuneiformibus lobulatis, floribus maximis corymbosis, pedunculis pedicellis sepalisque araneoso-lanatis, petalis perplurimis cuneato-obovatis albis, staminibus brevibus, acheniis in stylum gracilem flexuosum attenuatis villosis.

R. Lyallii, *Hook. f. Handbook of New Zealand Flora*, p. 4; *Armstrong in Gard. Chron.* N. S. xv. (1881), p. 74, fig. 131; *Masters, l. c.* N. S. xxiii. (1885), 351, fig. 67.

The first specimens of this remarkable plant, which is certainly the monarch of the genus, were procured in Milford Sound ,on the west coast of the Southern Island of New Zealand, by Dr. Lyall, when accompanying Capt. Stokes in the surveying voyage of H.M.S. *Acheron* (1847-9); unfortunately they consisted of leaves only. These did not even suggest the natural family to which they belonged, and from their likeness to those of a gigantic *Hydrocotyle vulgaris* were not unnaturally supposed to be referable to an unknown umbelliferous plant. In 1860-1 it was rediscovered by Drs. Sinclair, R.N., and Haast (now Sir Julius Von Haast, F.R.S.), when travelling in the mountains on the eastern side of the Middle Island, in marshy places at elevations of 3000 to 4000 feet (it attains even 5000 in the Lake Ohou district); and since that time it has been repeatedly found in various localities between the latitudes of Canterbury and Otago by Messrs. Travers, Hector, Buchanan, and other travellers. Its most remarkable character is its peltate leaves, which it shares with only three other species, namely, *R. Traversii*, Hook. f., also a native of the New Zealand Alps and too closely allied to *R. Lyallii* (but differs in its much smaller size and broader obcordate petals), and two indigenous in South Africa, *R. Cooperi*, Oliv. (in Hook. Ic. Pl. t. 1502), from marshy places on the mountains of Basuto Land, and *R. Baurii*, MacOwan (in Journ. Linn. Soc. xviii. 390,

and Hook. Ic. Pl. t. 1503), from similar situations in the Kaffrarian mountains.

The following account of the localities which *R. Lyallii* inhabits and other matters is extracted from notes by Mr. J. B. Armstrong, of Christchurch, N.Z., published in the "Gardener's Chronicle." It is confined to the Middle Island, extending from Canterbury, where it grows at 2000 to 4000 feet elevation, to Otago, where its limits are 1000 and 3500 feet, and grows on mountain slopes below the snow-fields, where the ground is usually kept moist during the summer from the trickling downwards of the melting snow, and is shaded from the mid-day sun. These slopes are perfectly drained by masses of rock beneath, and are covered by peat. It also, however, occurs in sand, and even in shingle. On mountains facing the south Mr. Armstrong has seen it "covering the ground for hundreds of acres with one huge sheet of pure white," but it more commonly grows in patches of a score or thirty plants among straggling patches of Olearias, Veronicas, and other shrubs. An admirable wood-cut, taken from a photograph sent by Mr. Armstrong, of a long border crowded with plants of this species, accompanies his description, and gives an excellent idea of its habit.

Seeds have been sent to England during the last twenty years by the thousand, but their germinating powers seem to be destroyed or retarded by the voyage, for very few plants have been raised from them. The late Mr. Isaac Anderson-Henry is said to have flowered it previous to 1864, and remarked that the seeds lay dormant for four or five years; whereas in New Zealand, Mr. Armstrong found that they germinated in exactly eight months. Those, one of which produced the plant here figured (which flowered in April, 1886), were received per Major Teschkernaker, of Sydenham; they were sown in a tropical heat at Kew in October, 1882, and germinated in November of the following year. It is known in New Zealand as the Lily, Water Lily, Mountain Lily, and Rookwood Lily; and the leaves attain a foot in diameter, and the flowers four inches; these vary from snow-white, the usual colour, to creamy and pink, all very rare colours in the genus, except in species of the aquatic (*Batrachium*) section.—*J. D. H.*

Fig. 1, 2, Stamens; 3, young carpels; 4, head of achenes; 5, ripe achenes:—*all but fig. 4 enlarged.*

M.S. del, J.N. Fitch lith.

L. Reeve & Cº London.

Tab. 6889.

IRIS Milesii.

Native of Temperate Himalayas.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

Iris (Evansia) *Milesii;* rhizomate late repente, foliis 7–8 ensiformibus pallide viridibus, pedunculo tripedali apice corymboso 3–4-cephalo, floribus 3–4-nis pulchre lilacinis evanescentibus inodoris, spathæ valvis ovatis vel oblongis firmulis brevibus, pedicellis bracteis vix brevioribus, perianthii tubo brevi, segmentis exterioribus obovatis falcatis pallide lilacinis lineis saturate purpureis radiantibus præditis carinâ lutea profunde fimbriata, segmentis interioribus obovato-unguiculatis concoloribus, stigmatis appendicibus quadratis profunde fimbriatis.

I. Milesii, *Foster in Gard. Chron.* N. S. vol. xx. (1883), p. 231.

This interesting new Iris was received in seed by Mr. Frank Miles from the Kulu and Parbutta valleys of the North-Western Himalayas, and first flowered in this country in the summer of 1883, when it was described by Professor Foster in the "Gardener's Chronicle." We have also received dried specimens from Dr. Brandis, which were gathered by himself in flower in the Parbutta valley in October, 1876. It is said to grow at an elevation above sea-level of 14,000 feet, so that it comes decidedly within the bounds of the temperate region. The flowers are handsome, but fugitive. Botanically it is very distinct and interesting as furnishing a link of transition between the fimbriated and bearded Irises (the sections Evansia and Pogoniris), for the crest is so deeply fimbriated as to have almost become a beard. Its nearest allies are the Chinese *Iris tectorum*, Maxim. (Bot. Mag. tab. 6118), and the well-known *Iris japonica*, Thunb. (*I. chinensis*, Curt. Bot. Mag. tab. 373). Our drawing was made from a specimen sent by Mr. Lynch from the Cambridge Botanic Garden in May, 1886.

Descr. *Rootstock* creeping to a length of half a foot or more. *Leaves* seven or eight to a stem, distichous,

ensiform, pale green, firm in texture, tapering gradually to a point, one and a half or two feet long, an inch and a half broad. *Flowering-stem* three feet long, bearing three or four clusters of flowers. *Flowers* three or four in a cluster, bright lilac, fugitive, inodorous; spathe-valves ovate or oblong, moderately firm in texture, green at the flowering-time, an inch or an inch and a half long; pedicels nearly or quite as long as the spathe. *Ovary* clavate; tube short, cylindrical; limb above two inches long; outer segments obovate, under an inch broad, with lines of darker lilac radiating from the deeply fimbriated yellow crested keel; inner segments rather shorter than the outer, more ascending, obovate-unguiculate, concolorous. *Anthers* linear, white, basifixed. *Styles* lilac, above an inch long; appendages quadrate, deeply fimbriated.—*J. G. Baker.*

Fig. 1, Whole plant, *much reduced;* 2, apex of leaf; 3, clusters of flowers, *both life-size;* 4, stamen; 5, style with stigma and crests:—*both enlarged.*

M. S. del, J. N. Fitch lith.

Vincent Brooks Day & Son Imp.

L. Reeve & Co. London.

Tab. 6890.

CERINTHE MINOR.

Native of Southern Europe and Western Asia.

Nat. Ord. Boragineæ.—Tribe Borageæ.

Genus Cerinthe, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 854.)

Cerinthe *minor*; glabra, glauca, caulibus erectis ramosis foliosis, foliis lævibus v. verrucosis inferioribus oblongis ovato-oblongisve, superioribus sessilibus ovato-cordatis serrulatis, racemis valde elongatis, bracteis auriculato-cordatis, sepalis lineari-lanceolatis acuminatis serrulatis, corollæ tubo calyce longiore, lobis lanceolatis acuminatis erecto-conniventibus demum reflexis, filamentis brevissimis, antheris anguste lanceolatis in appendicem lanceolatam acuminatam productis, carpellis lævibus.

C. minor, *Linn. Sp. Pl.* 772; *DC. Prodr.* x. 2; *Ait. Hort. Kew. Ed.* 2, vol. i. p. 295; *Boiss. Fl. Orient.* vol. iv. p. 148; *Jacq. Fl. Austr.* vol. ii. p. 15, t. 224; *Reichb., Ic. Crit.* vol. iii. fig. 481, and *Ic. Fl. Germ.* vol. xviii. t. 1295; *Nees Gen. Fl. Germ.* vol. vi. t. 66.

A hardy herbaceous plant, of short duration, and described as either biennial or perennial, very variable in character, and of its forms or varieties at least five species have been made, all brought together by Boissier in his "Flora Orientalis." It was introduced into England as long ago as 1570 by Mr. Hugh Morgan, and is figured in a rude wood-cut, with a description, though not a botanical one, in Lobel's "Adversaria" (p. 172). As an ornamental plant it is not to be compared with *C. major* (Bot. Mag. t. 333), or the rare *C. gymnandra* (t. 6130).

C. minor is a native of a wide range of country, extending from the Alps of Dauphiny to Middle and South Russia, inhabiting also Italy and Dalmatia, Greece, Asia Minor, Syria, Armenia, and N. Persia; it varies greatly in the size of the leaves, which are all green or spotted with white, and smooth or warted; the corolla is all yellow, or has a yellow tube and purple lobes or *vice versa* (as in the specimen here figured), or it has purple spots on the throat; the appendages of the anthers, too, vary in length. The specimen here figured is from a plant that flowered at Kew, where it has long been cultivated in the Herbaceous Ground, flowering in July.

August 1st, 1886.

DESCR. A pale green glaucous erect perennial branching herb, ten to eighteen inches high, with terete stem, and the flowering branches at first incurved, and then lengthening out into leafy racemes. *Leaves* one to four inches long, the lower obovate-spathulate, narrowed into a broad petiole, all green or spotted with white, smooth or with low small warts on one or both surfaces. *Racemes* six to eight inches long, densely clothed with leafy bracts; bracts ovate-cordate, subserrulate, acute or tip rounded; flowers one-third of an inch long, pedicelled, pedicels shorter than the calyx. *Sepals* lanceolate, acuminate, very unequal, serrulate, dilated after flowering. *Corolla-tube* rather larger than the calyx; lobes ovate-lanceolate, at first conniving, then sharply reflexed, colours yellow and purple variously disposed. *Stamens* on the mouth of the corolla; filaments very short; anthers long, connective dilated and produced into a subulate point of very variable length. *Carpels* quite smooth, enclosed in the dilated sepals.—*J. D. H.*

Fig. 1, Vertical section of flower; 2, calyx; 3 and 4, stamens; 5, top of style and stigma; 6, transverse section of ovary; 7, ripe fruit:—*all enlarged.*

M. S. del, J. N. Fitch lith.

Vincent Brooks Day & Son Lith.

Tab. 6891.

DISA atropurpurea.

Native of the Cape of Good Hope.

Nat. Ord. Orchideæ.—Tribe Ophrydeæ.

Genus Disa, *Berg.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 630.)

Disa (Trichochila) *atrosanguinea*; foliis gramineis rigidis acuminatis canaliculatis ultra medium sensim latioribus, scapis foliis longioribus 1–2-floris, vaginis 3 appressis acuminatis, bracteis cuspidatis ovarium subæquantibus, floribus purpureis, galea ampla ovato-rotundata acuta concava marginibus incurvis, calcare brevi lato subinflato apice rotundato, sepalis lateralibus oblongis incurvis, petalis parvis medio constrictis basi dilatatis supra medium late cuneatis 2-fidis, labello late ovato-cordato acuminato undulato-crispato, ungue brevi gracili.

D. atrosanguinea, *Sonder in Linnæa*, vol. xix. (1847), p. 96.

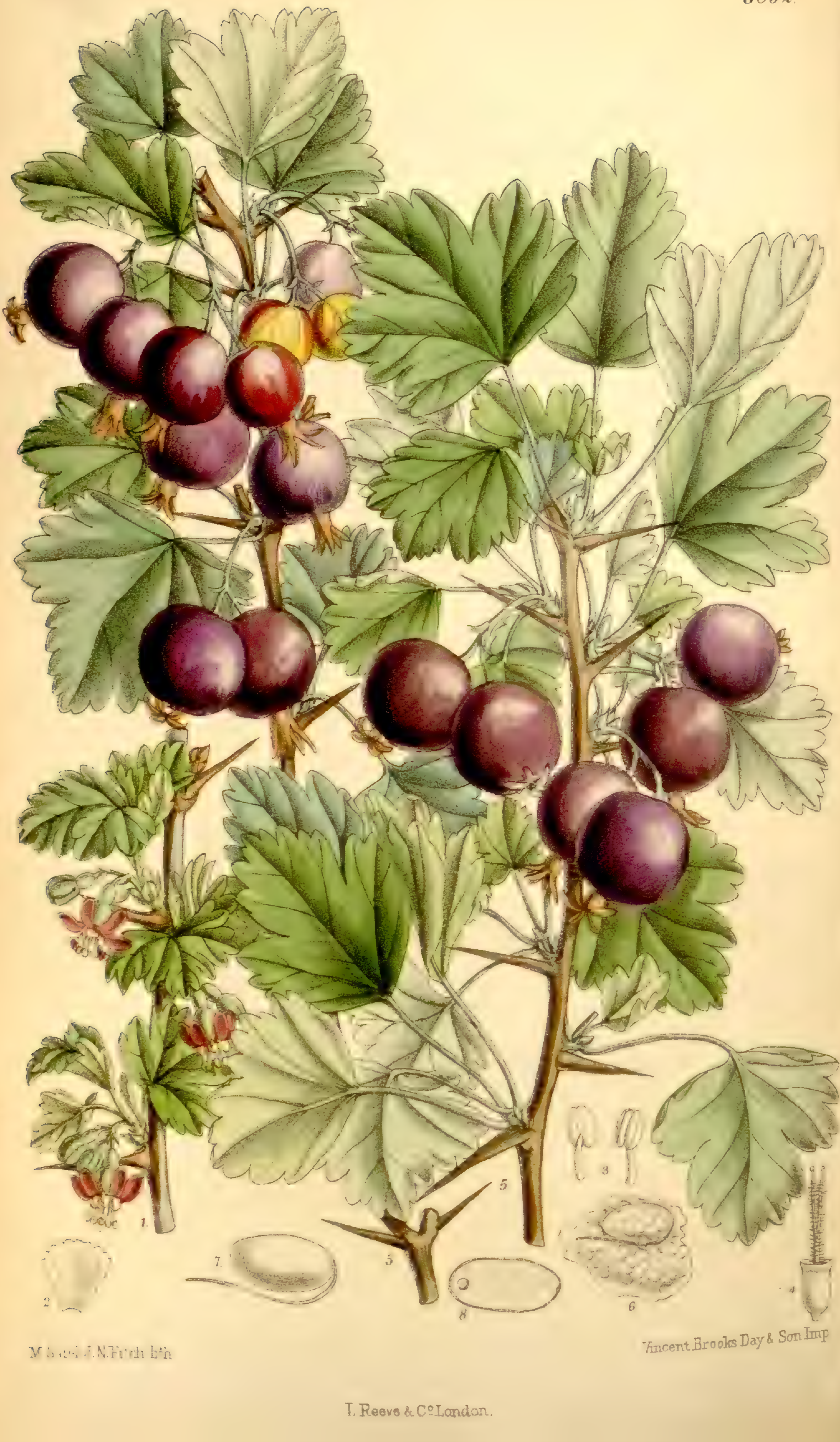
The Cape of Good Hope may prove to be the head-quarters of terrestrial Orchids in the southern hemisphere, if not in the globe. No fewer than a hundred species of *Disa* are already known, and Harvey, in the second edition of his Genera of South African plants, enumerates thirty-five genera of terrestrial habit, some of them with very numerous species. In Australia, including the tropical half of that continent, there are about the same number of genera, but only about 180 species of these are described in Bentham's "Flora Australiensis." In Europe, Nyman, in his "Conspectus Floræ Europææ," enumerates twenty-eight genera and 110 species. In North America they are fewer still, and neither tropical South America nor tropical Africa has hitherto been prolific in this class of plant. Asia remains, where the majority are Himalayan species of European genera or tropical genera of the Malay Peninsula and Archipelago, but they have never been enumerated. Nor will the Cape yield to any country in the beauty of its terrestrial Orchids, which no doubt centres in the genus *Disa*.

Disa atrosanguinea is a native of the Worcester district of the Cape, where it was first found near a waterfall at the town of Tulbagh by the botanical travellers Ecklon and

Zeyher. The specimen here figured was kindly sent by W. Gumbleton, Esq., in April of the present year. It is very closely allied to the *D. spathulata*, Swartz, also a native of Tulbagh, but that has the claw of the lip as long as or longer than the blade.

Descr. A rigid erect perennial herb. *Leaves* five to six inches long, grassy, gradually dilated from a slender petiole to towards the finely acuminate tip, one-sixth of an inch broad at the broadest part, light green and channelled above, keeled and paler beneath. *Scape* longer than the leaves, one- to two-flowered; sheaths few, appressed, acuminate; bracts oblong, acuminate, equalling or shorter than the ovary; flower one to one and a half inch long from the tip of the upper sepal to that of the lip, of a uniform rather dull red-purple, except the small yellowish petals. *Upper sepal* (galea) rounded-ovate, subacute, concave with incurved margins; lateral oblong, incurved. *Petals* minute, erect, contracted in the middle, below dilated and auricled in front; above obliquely cuneate and unequally two-lobed, with the broader lobe toothed, the smaller acute or obtuse. *Lip* about as large as the upper sepal, shortly clawed, ovate-cordate, acuminate, waved and rather crisped. *Column* very short.—*J. D. H.*

Fig. 1, Front, and 2, lateral view of flower with the sepals and lip removed; 3, front, and 4, lateral view of column; 5, a pollen-mass:—*all enlarged.*



M & N. J. N. Firth lith

Vincent Brooks Day & Son Imp

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Tab. 6892.

RIBES oxyacanthoides.

Native of North America.

Nat. Ord. Saxifragaceæ.—Tribe Ribesieæ.

Genus Ribes, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 654.)

Ribes (Grossularia) *oxyacanthoides*; glabrum v. parce setosum, spinis solitariis v. 2–3-nis, foliis orbiculatis v. basi truncatis cuneatisve 3-lobis obtuse inciso-crenatis lobulatisve, pedunculis brevibus 2–3-floris, floribus glabris, calycis tubo supra ovarium campanulato lobis oblongis obtusis brunneis breviore, petalis minutis flavis, bacca globosa glabra purpurea.

R. oxyacanthoides, *Linn. Sp. Pl.* 201; *DC. Prodr.* vol. iii. p. 478; *Ait. Hort. Kew. Ed.* 2, vol. ii. p. 43; *Nouv. Duhamel*, vol. iii. p. 232; *Torrey & Gray Fl. Bor. Am.* vol. i. p. 546, *excl. var.*; *Torrey, Fl. U.S.* p. 270; *A. Gray, Bot. Calif.* vol. i. p. 206; *Berland. in Mem. Soc. Genev.* p. 58, t. 1, fig. 2; *Loud. Arb. Brit.* vol. ii. p. 968, fig. 715; *S. Watson, Bibl. Index*, part i. p. 335.

R. hirtellum, *Michx. Fl. Bor. Am.* vol. i. p. 111; *Hook. Fl. Bor. Am.* vol. ii. p. 231; *Torr. & Gr. Fl. Bor. Am.* vol. i. p. 546; *A. Gray, Man. Bot. N.U.S. Ed.* 5, p. 164; *Loud. Arb. Brit.* vol. ii. p. 971.

R. saxosum, *Hook. Fl. Bor. Am.* vol. i. p. 231.

An American Gooseberry of very wide distribution, and one well worth cultivating on account of its fruit. It extends from Canada and the Northern United States to Hudson's Bay and British North America, and runs down the Rocky Mountains to New Mexico, occurring also in the Sierra Nevada of California, where it is found at elevations of 6000 to 9000 feet, as far south as Mariposa county. There has been so much confusion between this and *R. Cynosbati*, Linn., *lacustre*, Poir, and *setosum*, Lindl., that Gray only accepts it as probably the *oxyacanthoides* of Linnæus. In a paper on "Our Wild Gooseberries" by Gray, published in the "American Naturalist" (vol. x. p. 270, May 1876), that author says of the name *oxyacanthoides*, that "it must be brought into use in place of *R. hirtellum*, Michx. (which is generally inappropriate), for no reasonable doubt remains that it is the Hudson's Bay Gooseberry figured by Dillenius (Hortus Elthamensis, p. 166, t. 139, f. 166) upon which Linnæus founded the

species. It is the common smooth-fruited Gooseberry of New England and the whole region northward."

R. oxyacanthoides, or "Currant Gooseberry," was introduced into England in 1705 by a Mr. Reynardson, and is mentioned by Plukenet in his "Amaltheum Botanicum." The fruiting specimens figured were kindly sent in August, 1885, by G. Fox, Esq., of Chad Hill, Sandown, Isle of Wight, and the flowering in April of the present year. It only remains to add that though smaller than the common gooseberry, the fruit is as good as the ordinary varieties of that species, and the skin is much thinner, and that it has none of the unpleasant musky flavour of some allied North American species. I have received from the South of France a small globose purple smooth-skinned ripe gooseberry in the month of May, which resembles those of *oxyacanthoides* so much that I suspect it may be cultivated there for the sake of its fruit. Loudon states that the colour of the latter varies from red to green and purplish blue. It is described as an unfailing cropper, flourishing when the ordinary gooseberry flags for want of moisture; and its only drawback is the thorny nature of the bush, which renders the berries difficult to pick.

Descr. An erect shrub, two to four feet high; branches pale, smooth, or with a few scattered bristles; spines one to three. *Leaves* one and a half to two inches broad, usually semicircular in outline, with a truncate base, but the latter is sometimes cuneate, three- to five-lobed, lobes coarsely crenate, pale green and glabrous above, paler and sometimes pubescent beneath; petiole very slender, as long as the blade. *Racemes* small, short, two- to three-flowered; bracts minute; flowers half an inch in diameter. *Calyx-tube* campanulate, green, lobes about as long as the tube, oblong, tip rounded, reddish-brown. *Petals* minute, yellow. *Stamens* shorter than the calyx-lobes. *Ovary* ellipsoid, glabrous; style two-cleft to below the middle, hairy. *Berry* globose, three-quarters of an inch in diameter, green red or purple; skin very tender, quite glabrous; pulp sweet. *Seeds* many.—*J. D. H.*

Fig. 1, Flowering branch; 2, petal; 3, stamens; 4, ovary; 5, fruiting specimen; 6, seed with fleshy testa; 7, nucleus and raphe from do.; 8, longitudinal section of seed and embryo;—*all but figs.* 1 *and* 5 *enlarged.*

M.S. del, J.N.Fitch, lith.

Vincent Brooks Day & Son, Imp

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Tab. 6893.

BEFARIA GLAUCA.

Native of New Grenada.

Nat. Ord. Ericaceæ.—Tribe Rhododendreæ.

Genus Befaria, *Mutis.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 599.)

Befaria *glauca;* ramis foliisque glaberrimis, foliis oblongo-lanceolatis acutis breviter petiolatis venis obscuris supra læte viridibus convexis subtus glaucis, racemo paniculave erecta laxe multiflora, ramis ramulis pedicellisque minute sparse puberulis glaberrimisve, bracteis parvis sparsis subulatis, floribus longe gracile pedicellatis, sepalis rotundatis ciliolatis, petalis lineari-oblongis roseis nervis 3–5 saturatioribus percursis, filamentis glaberrimis elongatis, antheris brevibus.

B. glauca, *Humb. and Bonpl. Pl. Equinoct.* vol. i. p. 117, t. 119; *Humb. Bonpl. and Kunth, Nov. Gen. et Sp.* vol. iii. p. 291; *De Cand. Prodr.* vol. vii. p. 731; *Morren, Ann. Soc. Agric.*, and *Bot. de Gand.* vol. i. t. 7.

The genus *Befaria* in habit, inflorescence, colour of flowers, and the elevations at which the most of the species grow, represents in the Andes the Rhododendrons of the mountains of the Northern Hemisphere; and it is a noteworthy fact, that they begin in the American continent exactly where the true Rhododendrons find their southern limit. Thus, of the latter genus, *R. punctatum*, Andr. (Bot. Mag., tab. 2285), the most southern species known, which inhabits the mountains of Georgia and Carolina, also occurs in the pine barrens of West Florida, where it finds its southern limit; and it is in the sandy soils of Georgia and East Florida that the most northern species of *Befaria*, namely *B. racemosa*, Vent., is found.

Notwithstanding this, it is not to *Rhododendron* that the botanist looks for the nearest allies of *Befaria*, but to the comparatively inconspicuous genus *Ledum*, which in America extends from the Arctic regions to the mountains of Guiana, where also *Befaria* occurs. *Befaria* is, in fact, only distinguished from *Ledum* by few other characters than habit and the size of the flower, and consists in *Ledum* having a five-toothed calyx, five or ten stamens, and an oblong five-valved capsule bursting from the base

upwards, whilst *Befaria* has a five- to seven-partite calyx, and a globose six- to seven-valved capsule bursting (as in *Rhododendron*) from the top downwards.

B. glauca was discovered by Humboldt and Bonpland on the Silla de Caraccas, in the beginning of the century. It was introduced into cultivation by Jacob Makoy of Liege, who received seeds from the collector Nicholas Funk, and flowered plants of it in 1845. Its geographical range is uncertain; it seems identical with a plant collected in the colony of Tovar by Fendler (No. 743), and by Pierce in the Andes of Poruro (9000 ft.) in Peru, and it may hence prove a form of a species with rusty-pubescent peduncles and pedicels, which is common in the Andes from New Grenada southward.

The specimen here figured was raised from seed sent to Kew by Mr. Robert Thomson (formerly of the Jamaica Botanical Garden) on his return from an excursion to the Silla with Professor Ernst of Caraccas in 1879, and flowered in the Temperate House in April of the present year. Mr. Thomson says of it, "I first found it at 5500 feet elevation, forming thickets everywhere over the slopes and ridges up to 7200 feet, the foliage diminishing much in size at the higher elevations; so much so that specimens from the highest spots might be taken for a distinct species. It grows in a stiff soil, partly of decayed vegetable mould, and partly of clay. At a height of over 7000 feet I observed a trunk two feet in diameter, which had been cut down at about ten feet above the ground, and the top of which bore branches two feet high. The plant, however, rarely exceeds eight to ten feet in height."

The other species of *Befaria* figured in this work are *B. coarctata* (Tab. 4433), *B. æstans*, Linn. (Tab. 4818), and *B. Mathewsii*, Hook. (Tab. 4981).—*J. D. H.*

Fig. 1, Pedicel, calyx and style; 2 and 3, stamens; 4, ovary; 5, transverse section of the same:—*all enlarged.*

M.S. del. J.N. Fitch, lith.

Vincent Brooks Day & Son Imp.

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Tab. 6894.

IRIS Statellæ.

Native of Southern Europe.

Nat. Ord. Irideæ.—Tribe Moræeæ.

Genus Iris, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

Iris (Pogoniris) *Statellæ;* rhizomate breviter repente, foliis ensiformibus erectis glauco-viridibus caule brevioribus, caule monocephalo subpedali, floribus evanescentibus, sulphureis viridi venosis, spathis bifloris, valvis oblongis ventricosis apice marginibusque late scariosis, ovario subsessili, perianthii tubo cylindrico viridi subunciali, limbi segmentis exterioribus obovato-cuneatis falcatis dimidio inferiori barbatis, interioribus erectis obovatis unguiculatis, antheris filamento æquilongis, styli cristis deltoideis serratis.

I. Statellæ, *Todaro Nuov. Gen.* p. 5; *Hort. Panorm.* p. 23, t. 6; *Bull. Soc. Bot. France*, vol. v. p. 659.

This new Iris is very nearly allied to *Iris lutescens* of Lamarck, which was figured long ago in the Botanical Magazine on Plate 2861, differing principally in its more membranous spathe-valves and broader perianth-segments. These two species and *I. virescens* form a group differing from the German Irises by having only a single cluster of more fugitive less brightly-coloured flowers. The native country of the present plant is not known clearly. It was described by Professor Todaro from specimens grown in the Botanic Garden of Palermo. It was first imported into this country a few years ago by Professor M. Foster. Our drawing was made from plants sent up from Cambridge in the middle of May by Mr. R. J. Lynch.

Descr. *Rhizome* short-creeping. *Leaves* ensiform, glaucous green at the flowering season, six to nine inches long, under an inch broad. *Stem* about a foot long, bearing only a single terminal cluster, containing two flowers; spathe-valves oblong, ventricose, scariose in the upper half and on the edge at the flowering season. *Flowers* fugitive, pale sulphur-yellow, veined with green; ovary subsessile; tube cylindrical, green, about an inch long; limb above two inches long; outer segments obovate-cuneate, falcate, with a dense purplish beard, tipped with

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orange-yellow down the lower half; inner segments as long as the outer, obovate, rounded to a distinct claw. *Anthers* as long as the filaments. *Styles* an inch long, the serrated deltoid crests reaching to the tip of the beard.—*J. G. Baker.*

Fig. 1, A single stamen; 2, style with crests:—*both enlarged.*

1.

2.

M.S. del, J.N.Fitch, lith.

Vincent Brooks Day & Son, Imp.

Tab. 6895.

TULIPA Ostrowskiana.

Native of Turkestan.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Tulipa, *Linn.* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 818.)

Tulipa *Ostrowskiana;* bulbo ovoideo tunicis exterioribus atrobrunneis intus parce adpresse pilosis, caule glabro glauco unifloro triphyllo, foliis glauco-viridibus marginibus obscure ciliatis, inferiori oblongo semipedali, superioribus lanceolatis, pedunculo glabro erecto, perianthio campanulato splendide rubro segmentis conformibus oblongis acutis basi nigro-maculatis, filamentis deorsum nigrescentibus basi nullo modo pilosis, stigmatibus sessilibus ovario vix latioribus.

T. Ostrowskiana, *Regel in Gartenflora*, vol. xxxiii. (1884), p. 34, 71, 358, t. 1144, fig. 1; *Descr. Pl. Nov.* fasc. ix. p. 9.

This is another fine new Tulip from Central Asia. It was discovered in Eastern Turkestan in the year 1881 by Dr. Albert Regel, and was named in compliment to Herr von Ostrowski, chief minister of the department to which the Imperial Botanic Garden at St. Petersburg belongs. Of the older-known types it is nearest to *T. Didieri*, Jordan (Bot. Mag., tab. 6639). From *T. Gesneriana* it may be known at a glance by all the six segments of the perianth being narrowed to an acute apex and furnished with a small cuneate blotch of black at the base of the claw. There are two forms, one scarlet, with the outer segments of the perianth flushed outside with green, and the other crimson, with the outer segments with a glaucous tint, but no green. Our plate represents a plant grown at Kew, the bulbs of which came from Dr. de Regel. With us it flowers in the open air in the middle of April.

Descr. *Bulb* ovoid. middle-sized; outer tunics rigid, brown-black, with a few adpressed hairs inside. *Stem* one-flowered, three-leaved, glaucous, glabrous, about a foot long. *Leaves* glaucous, glabrous on the surface, minutely ciliated, erecto-patent; lowest oblong, acute, half a foot long; two upper much smaller, lanceolate. *Peduncle* erect,

three or four inches long. *Perianth* campanulate, bright red, an inch and a half long; segments uniform, oblong, acute, furnished with a small black blotch at the base. *Stamens* half as long as the perianth; anthers reddish; filaments tinged with black in the lower half, glabrous at the base. *Ovary* cylindrical-trigonous, shorter than the stamens; stigmas about equalling the ovary in breadth.—*J. G. Baker.*

Fig. 1, A stamen; 2, pistil:—*both enlarged.*

M. S. del. J. N. Fitch.

Vincent Brooks Day & Son Imp.

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Tab. 6896.

CORYDALIS Sewerzovi.

Native of Western Turkestan.

Nat. Ord. Papaveraceæ.—Sub-Ord. Fumarieæ.

Genus Corydalis, *DC.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 55.)

Corydalis (Bulbocapnos) *Sewerzovi;* glaberrima, radice tuberosa, caule pedali crasso flexuoso carnosulo, foliis infimis suboppositis verticillatisve longe petiolatis pinnatisectis, foliolis paucis alternis oppositisque obovatis obtusis apiculatisve glaucis flabellatim nervosis integris v. inæqualiter lobatis, foliis caulinis bracteisve amplis obovatis obtusis acutis v. acuminatis, floribus paucis gracillime pedicellatis, sepalis minimis membranaceis dentatis v. lobulatis albis, corolla sesquipollicari aurea, tubo inferne gibboso calcare elongato robusto apice incurvo obtuso brunneo multo breviore, limbi labiis æquilongis reflexis marginibus incurvis, stylo filiformi, stigmate discoideo lobulato.

C. Sewerzovi, *Regel Pl. Semenov. Fasc.* i. *Suppl.* ii. p. 16, n. 606, and in *Garten-flora*, vol. xxxi. (1882), p. 97, t. 1077.

A very handsome species of *Corydalis*, allied to the common *C. bulbosa*, Linn., of our gardens, but with fewer flowers of very much greater size. Dr. de Regel, to whose exertions we are indebted for so many beautiful novelties from Central Asia, first described it in 1870 from specimens collected by Semenov in 1857, in the cis- and trans-Ili provinces of Western Turkestan; and he afterwards figured it in his Garden Flora, from plants which flowered in the St. Petersburg Garden, and of which roots were sent by his indefatigable and intrepid son, Dr. Albert Regel. As a species he regards it as nearest to *C. Ledebouriana*, Karel. and Kiril., of Soongaria (which in the "Flora Indica," but not in the Flora of British India, was erroneously referred to *C. rutæfolia*), and indeed it much resembles a greatly enlarged form of that plant.

C. Sewerzovi was drawn from specimens sent to Kew by Mr. Elwes, from his garden at Preston, Cirencester, in February last, where it had flowered in a frame under protection. It flowered at the same time at Kew, from tubers, received in June, 1885, from Dr. Aitchison, botanist to the Affghanistan Boundary Commission.

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Descr. *Root* an irregular tuber, about the size of a small potato. *Stems* one or more from the root, eight to twelve inches high, stout, succulent, flexuous and ascending, unbranched. *Leaves* pale green, glaucous, rather fleshy, lower opposite or in a false whorl, from where the stem leaves the ground, a span long and less, pinnatisect, long-petioled; pinnules few, opposite and alternate, an inch long or less, obovate, obtuse or apiculate, entire or with one or two irregular lobes or segments; nerves flabellate, faint; cauline leaves or bracts very large, sessile, one inch long or less, broadly cuneate, subacute or with the tip rounded; base often rounded or cordate, glaucous, usually longer than the peduncles. *Flowers* few, distant; pedicels slender. *Sepals* very minute, membranous, white, irregularly toothed or crenate. *Corolla* one and a half inch long, golden yellow with a brownish tip to the spur; tube gibbously convex below, not half as long as the very stout curved horizontal cylindric spur, the tip of which is incurved and obtuse; tips of limb subequal in length, with broadly incurved margins, the upper broadest and rounded, the lower ovate obtuse. *Ovary* oblong; style very slender, stigma erect disciform lobulate.—*J. D. H.*

Fig. 1, Sepals; 2, bundle of stamens; 3, pistil:—*all enlarged.*

M.S. del, J.N. Fitch lith.

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TAB. 6897.

GLADIOLUS KOTSCHYANUS.

Native of Persia and Affghanistan.

Nat. Ord. IRIDEÆ.—Tribe IXIEÆ.

Genus GLADIOLUS, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 709.)

GLADIOLUS (Sphærospora) *Kotschyanus;* bulbo ovoideo tunicis fibrosis, caulibus erectis strictis gracilibus 1–2-pedalibus, foliis 2–3 linearibus remote superpositis rigidulis glabris, floribus 4–12 in spicam laxam secundam dispositis, spathæ valvis lanceolatis firmulis inæqualibus, perianthii rubello-purpurei tubo infundibulari, segmentis anguste obovatis subæquilongis tubo 2–3-plo superantibus, 3 inferioribus magis falcatis et unguiculatis facie purpureo saturatiori pulchre carinatis, genitalibus perianthio distincte brevioribus, seminibus subglobosis exalatis.

G. Kotschyanus, *Boiss. Diagn.* ser. 1, part xiii. p. 15; *Baker in Journ. Linn Soc.* vol. v. p. 141.

G. imbricatus, *var.* Kotschyanus, *Boiss. Fl. Orient.* vol. v. p. 141.

This is the first-fruits, from a horticultural point of view, of Dr. Aitchison's labours as Botanist to the Affghan Boundary Commission. The Oriental Gladioli are in a state of great confusion, for they belong to a group in which the differential characters of the species are so slight that they can only be worked out by studying the plant in all stages of growth, which of course can only be done properly when it is brought into cultivation. Dr. Aitchison has brought home a good supply of the present plant in a late stage of growth, and we have now grown and flowered it from his seeds at Kew; and after studying this full material, I feel quite satisfied that it is distinct specifically from the widely-spread European *Gladiolus imbricatus*, with which Boissier has lately united it. There are several allied Oriental forms, as *G. subbiflorus*, *hygrophilus* and *libanoticus* of Boissier, and *G. Raddeanus* of Trautvetter, which also require to be studied under cultivation. Dr. Aitchison found the present plant growing abundantly both in Eastern Persia and North-Western Affghanistan as a weed in cultivated fields at an elevation of five thousand

feet above sea-level. With us at Kew it flowered about the middle of May. The figures of the fruit and seeds are taken from Dr. Aitchison's dried specimens.

Descr. *Bulb* ovoid, under an inch in diameter; outer tunics brown, with close strong parallel fibres, anastomosing towards the top by a few cross-veinlets. *Flowering-stems* slender, stiffly erect, one or two feet long, sheathed for two or three inches at the base by a scariose rudimentary leaf. Produced *leaves* generally three, distantly superposed, linear, glabrous, strongly ribbed, the central one the largest, half a foot long. *Flowers* four to twelve, arranged in a lax secund spike; spathe-valves unequal, lanceolate. *Perianth* bright lilac-purple; tube funnel-shaped, half an inch long; segments narrowly obovate, an inch or an inch and a quarter long, the three lower ones keeled with darker lilac and more spreading and more distinctly unguiculate than the upper three. *Stamens* not reaching to the tip of the perianth-segments; anthers linear, half an inch long. *Style-branches* reaching to the tip of the anthers. *Capsule* oblong, half an inch long. *Seeds* globose or slightly angled by pressure, not at all winged, pale brown.—*J. G. Baker.*

Fig. 1, Front view of anther; 2, side view of anther; 3, pistil, *all enlarged*; 4, spike in fruiting stage, *life-size.*

Tab. 6898.

TILLANDSIA FENESTRALIS.

Native of Rio de Janeiro.

Nat. Ord. Bromeliaceæ.—Tribe Tillandsieæ.

Genus Tillandsia, *Linn.* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 669.)

Tillandsia (Vriesia) *fenestralis ;* caulibus robustis cæspitosis, surculis axillaribus sessilibus, foliis perplurimis 1–2 pedalibus 2–3 poll. latis recurvis late linearibus abrupte acuminatis coriaceis viridibus tessellatis, scapo simplici erecto bracteato, bracteis convolutis appressis, spica erecta stricta robusta, floribus approximatis distichis horizontalibus sessilibus, bracteis tubulosis crassis teretibus viridibus brunneo-maculatis ore obliquo sphacelato, sepalis bracteis paulo longioribus viridibus convolutis, corollæ subcampanulatæ petalis late obovato-oblongis emarginatis pallide aureis basi 2-squamosis, staminibus inclusis superne dilatatis, antheris adnatis linearibus, stylo gracili, stigmate minuto.

Vriesia? fenestralis, *Linden and André in Ill. Hortic.* 1875, p. 124, t. 215.
V. fenestralis, *Morren in Belgique Hortic.* vol. xxxiv. (1884), p. 65, t. 4, 5.

This very striking plant was introduced into cultivation as early as 1852, by Mr. Linden, when it at once attracted the attention of Horticulturists by its bold and peculiarly coloured foliage. It was figured and published by M. André in 1875, but without flower, as a doubtful *Vriesia*. Seeds were sent to the late Prof. Morren, of Liege, by M. Glaziou, Director of the Imperial Gardens of that city, in 1856, and from these was raised the flowering specimen which is figured by that lamented botanist in the "Belgique Horticole," together with its full description. From the latter we learn that the flowers expand successively after two or three days' interval; they open after midday, and remain open till the following morning, when the petals wither. The flowers exude an acid secretion, tasting of vinegar, and which reddens litmus paper. This is also the case with *V. bituminosa*, Wawra. Our specimen was purchased at the sale of Prof. Morren's plants, and flowered in June of the present year.

Descr. A very robust densely tufted plant, with a short stout stem, and numerous recurved leaves. *Leaves*

one to two feet long, and two to three inches broad, linear, abruptly acuminate, with a brown rigid tip, concave, pale green with innumerable parallel dark green veins and cross veins. *Scape* a foot high, strict, erect, clothed with dark green acute convolute bracts. *Spike* a foot and a half high, strict, stout. *Flowers* sessile, distichous, horizontal, two to two and a half inches long; bracts dark green spotted with brown, tubular, rather gibbous at the base; mouth oblique, margins brown membranous. *Sepals* half as long as the bract or less, dark green, convolute. *Corolla* narrowly campanulate; petals broadly obovate-oblong, convolute, emarginate, exserted from one-third to one-half their length, pale golden-yellow; scales two, basal, ovate, acuminate. *Stamens* included, filaments dilated upwards; anthers linear. *Ovary* elongate-ovoid; style very slender, stigma minute, three-lobed.—*J. D. H.*

Fig. 1, Plant reduced; 2, leaf, and 3, spike of *the natural size;* 4, petal and stamen; 5 and 6, stamens; 7, pistil:—*all enlarged.*

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TAB. 6899.

BEGONIA JOHNSTONI.

Native of Tropical Africa.

Nat. Ord. BEGONIACEÆ.

Genus BEGONIA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 842.)

BEGONIA (Diploclinium) *Johnstoni*; monoica, caulescens, caule erecto robusto, ramis pedunculis petiolisque elongatis crassis, foliis longe petiolatis membranaceis valde oblique ovatis profunde unilateraliter cordatis, lobis rotundatis imbricatis, margine irregulariter crenato, subtus sparse pilosis, subtus apicem versus petioli annulo setarum instructo, stipulis magnis late ovatis obtusis, bracteis ovato-rotundatis obtusis v. subacutis, cymis 4-floris, floribus roseis cernuis, fl. masc. 4, fl. fem. 5–6, sepalis late obovatis oblongisve pallide roseis, staminibus perplurimis, filamentis liberis, stylis 3 brevibus basi connatis ramis subflabellatis fascia papillosa subspiraliter torta continua, capsula trialata ala una majore porrecta obtusa, placentis 2-partitis.

B. Johnstoni, *Oliv. in Trans. Linn. Soc. ined.*

The subject of this plate is alluded to by Prof. Oliver under his description of *B. Johnstoni* cited above, which was prepared from a very indifferent specimen of a plant gathered by Mr. Johnston on his expedition to Kilimanjaro, at an elevation of 5000 to 6000 feet on that mountain. Whether the two are quite the same specifically cannot be positively ascertained till better specimens of the Kilimanjaro plant are obtained; meanwhile they agree in too many important points to induce me to pronounce them distinct. The chief differences are, that *B. Johnstoni* has a blood-red stem, its young leaves are irregularly toothed rather than crenate, the bracts are more acute, the scattered hairs on the under surface of the leaf are confined to the nerves, and the wing of the fruit is shorter and broader. Add to this that the two come from very far apart localities, the seeds of that here figured having been sent by the late Bishop Hannington from the Masai country, a district far to the north-west of Kilimanjaro (probably from the Usigara Mountains).

B. Johnstoni belongs to the Asiatic section of the genus *Diploclinium*, and differs from most of the African Begonias

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in the bipartite placentas. For the seeds the Royal Gardens are indebted to Mr. Mitten, A.L.S., of Hurst-pierpoint, who received them from Bishop Hannington in 1884; the plants raised from them flowered at Kew in April, 1886.

Descr. A tall, succulent, robust, branched species, twelve to eighteen inches high; stem, branches, petioles, peduncle and pedicels pale watery green with scarlet striæ. *Leaves* long-petioled, four to six inches long, obliquely ovate, acute, coarsely crenate, deeply two-lobed at the lateral base where the rounded lobes overlap, dark green above, paler beneath with soft scattered hairs; nerves radiating from the top of the petiole; petiole as long as the blade, clothed at the top with soft white reversed bristles, which also form a ring round its insertion. *Cymes* long-peduncled, four- to six-flowered; flowers pale rose-coloured, pedicelled, drooping, one or two females in each cyme. Male fl. one and a half to two inches in diameter. *Sepals* four, outer broadly oblong, inner larger, more obovate. *Stamens* very numerous, filaments free; anthers subglobose. Female fl. smaller. *Sepals* five, outer obovate-oblong. *Ovary* three-celled, placentas bipartite; stigmas three, short, united at the base; arms twisted with a continuous papillose band. *Capsule* three-winged, one wing protruded, upcurved obliquely, triangular-ovate, obtuse.—*J. D. H.*

Fig. 1, Top of petiole and base of leaf; 2, stamens; 3, transverse section of immature capsule; 4, stigmas :—*all but fig.* 1 *enlarged.*

M.S. del. J.N. Fitch lith.

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TAB. 6900.

LEONTICE ALBERTI.

Native of Western Turkestan.

Nat. Ord. BERBERIDEÆ.—Tribe BERBEREÆ.

Genus LEONTICE, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 43.)

LEONTICE *Alberti*; tubere depresso-globoso, caulibus robustis, foliis subradicalibus 2 longe petiolatis digitatim 5-foliolatis, foliolis per anthesin involutis, demum late elliptico-oblongis apice rotundatis, stipulis amplis viridibus venosis, pedunculo florifero robusto, racemo basi foliis oppositis instructo conico multifloro, bracteis latis orbiculatis flabelliformibusve, floribus amplis ochroleucis, sepalis oblongis, petalis parvis cuneato oblongis truncatis concavis, ovario ovoideo stipitato.

L. Alberti, *Regel, Gartenflora*, 1881, p. 293, t. 1057, f. 2.

This is one of the many interesting discoveries of Dr. de Regel's distinguished son, made during his extensive wanderings in Central Asia. Its exact habitat is on the Western Alatau Mountains, between Tashkend and Samarcand. It is allied to the *L. altaica* of the Siberian Altai, and indeed represents a gigantic form of that species.

The specimen here figured was communicated by Mr. Elwes from his garden at Preston, Cirencester, with whom it flowered in April of the present year. From a comparison with the plate given by Dr. Regel in the "Gartenflora," it will be seen that when the latter was made the plant had not attained its full development.

DESCR. *Tuber* two inches broad, oblately spherical, much depressed at the top. *Stems* several from the top of the tuber, very stout, each usually giving off two subradical long-petioled undeveloped (at the flowering time) leaves, and a very stout flowering stem; and it is only long after the flowering of the latter that the two aforesaid leaves attain their full development. Fully-formed *leaves* on petioles four to five inches long, subdigitately five-partite into as many pale green glaucous rather fleshy sessile elliptic-obtuse leaflets; nerves obscure above, parallel and more prominent beneath; stipules three-quarters of an

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inch long, broadly oblong, green with deeper green veins. *Flowering-stem* six to eight inches high, very robust, naked below, bearing below the conical raceme one or two pairs of opposite leaves with the leaflets convolute during flowering, and with large broad stipules often tipped with red-brown at the base of the petiole; bracts like the stipules, but darker-coloured, shorter and broader. *Flowers* nearly one inch in diameter, ochreous yellow, streaked with red-brown at the back. *Sepals* spreading, oblong, obtuse. *Petals* small, erect, cuneately oblong, with a crenate truncate apex, rather shorter than the stamens, concave in front and tubular at the base. *Stamens* short, anthers oblong. *Ovary* stipitate, ovoid, narrowed into the stout curved style.—*J. D. H.*

Fig. 1, Bud with bract; 2, flower with sepals removed; 3, petal; 4 and 5, stamens; 6, stamen with anther valves spreading; 7, ovary and top of pedicel; 8, top of pedicel and ovules;—***all enlarged.***

M.S. del. J.N. Fitch Lith.

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Tab. 6901.

COLCHICUM Troodii.

Native of Cyprus.

Nat. Ord. Liliaceæ.—Tribe Colchiceæ.

Genus Colchicum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 821.)

Colchicum (Arenarii) *Troodii;* cormo mediocri, tunicis castaneis apice productis, foliis 3–6 hysteranthiis vernalibus recurvis loratis 6–12 poll. longis ⅔–1 poll. latis apice obtuse angustatis, floribus perplurimis autumnalibus niveis, perianthii tubo 2–3-pollicari, limbi lobis pollicaribus linearibus acutis, staminibus perianthii lobis dimidio brevioribus, antheris linearibus luteis, stylis tubo æquilongis, stigmatibus oblique truncatis, capsula ovoideo-oblonga acuta ¾ poll. longa pedicellata, carpellis longe rostratis.

C. Troodi, *Kotschy in Unger and Kotschy Cyprus*, p. 190; *Boiss. Fl. Orient.* vol. v. p. 161; *Baker in Journ. Linn. Soc.* vol. xvii. p. 430.

A native of the Island of Cyprus, where it was discovered by that indefatigable Oriental traveller and collector, Dr. Kotschy, on the mountains of Prodromum and Troodos. It has not been found elsewhere, though it may occur in Asia Minor, as Boissier mentions having a plant with similar leaves collected by Bourgeau on Mount Elami in Lydia. As a species it comes very near to the *C. neapolitanum*, differing, according to Baker, in its more robust habit, more numerous flowers, and broader leaves, to which Boissier adds the rounded tips of the latter. The flowers are described by Kotschy as purplish lilac, and by Boissier as pale rose-coloured with the perianth-segments lanceolate and acute, none of which characters are shown in the plant here figured, the flower of which is of a lovely white, with linear oblong rather obtuse perianth-lobes.

The specimen here figured was flowered by Mr. Elwes in his garden near Cirencester in November, 1885, and its leaves arrived at maturity in the following April.

Descr. *Corm* one and a half to two inches in diameter; coats a rich chestnut-brown, produced upwards round the base of the white membranous spathe that is tinged with pink. *Leaves* three to six, appearing in spring long after the flowers, six to twelve inches long, by two-thirds to one

inch broad, strap-shaped, abruptly rounded at the rather narrowed tip, dark green above, paler beneath. *Flowers* very numerous, as many as twelve, appearing in late autumn. *Perianth* pure white; tube two to three inches long, slender; throat funnel-shaped, glabrous; lobes nearly an inch long, linear-oblong or almost strap-shaped, obtuse or subacute. *Stamens* less than half the length of the perianth-lobes, erect, filaments slender; anthers linear, yellow. *Style* about as long as the perianth-tube, slender, stigma obliquely truncate. *Capsule* pedicelled, ovoid-oblong, acute, three-quarters of an inch long; carpels with long beaks.—*J. D. H.*

Figs. 1 and 2, Stamens; 3, top of a style:—*both enlarged.*

M S del. J N Fitch lith.

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Tab. 6902.

IRIS Eulefeldi.

Native of Eastern Turkestan.

Nat. Ord. Irideæ.—Tribe Moreæ.

Genus Iris, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 686.)

Iris *Eulefeldi;* rhizomate compacto, foliis 5–6 confertis glauco-viridibus, scapo pedali 2-floro medio 1-foliato, floribus inodoris, spathæ valvis 2–3-pollicaribus subnavicularibus acutis viridibus demum divergentibus membranaceis et pallidis, pedicellis bracteis multo brevioribus, perianthii tubo crasso ovario duplo longiore, segmentis exterioribus anguste cuneato-obovatis obtusis, ungue brunneo lineato, limbo pendulo lilacino basin versus nervis brunneo-purpureis lineato, barba densa alba apicibus aureis, segmentis interioribus erectis oblanceolatis ungue elongato aureo brunneo striato et punctato, lamina purpureo-brunnea striata, stigmatibus oblongis patulis cœruleis segmentis interioribus perianthii paullo brevioribus, lobis dimidiato-oblongis serratis, antheris linearibus.

I. Eulefeldi, *Regel in Act. Hort. Petrop.* vol. v. p. 633; *Gartenflora,* vol. xxvii. (1878), p. 324, t. 954.

I. glaucescens, *Bunge*, var. β. Eulefeldi, *Maxim. in Bull. Acad. Petersb.* vol. xxv.; *Regel Descript. Pl. Nov. fasc.* vii. p. 212.

Prof. Michael Foster, F.R.S., to whom I am indebted for the following description and remarks, informs me that *I. Eulefeldi* is a shy flowerer, but that the foliage remains green all summer, not dying down in July and shooting again in August like the *Oncocycli* and many other Central Asian Irises. It dies down late in autumn, and does not shoot again till March or April. The colour of the flower is of extraordinary beauty and delicacy, very difficult to describe. As yet, Prof. Foster adds, I know no *Iris* like it, being unlike the *Oncocycli*, or any of our European dwarf species of the genus. It makes a distant approach to *I. Blondowi*, but without capsule and seeds its amount of affinity cannot be determined. Its distinctive features are its rhizome, foliage, spathe-valve, colour of flower, and especially the form of the narrow long cuneate segments of the perianth. Maximovicz makes it a variety of *I. scariosa*, Pallas (*I. glaucescens*, Bunge), but according to

Ledebour's description of that plant, *I. Eulefeldi* would appear to be abundantly distinct.

The treatment of *I. Eulefeldi* is that of *I. iberica*, namely, keeping it dry, and under glass in summer. It flowered in the Botanical Gardens of Cambridge in May, and in Kew at about the same time, and is a native of mountains near Suidun at an elevation of 5000 to 6000 feet.

Descr. Rhizome compact, as in ordinary *Pogoniris*, the new bud remaining attached to the old part of the rhizome by a broad base about an inch in diameter, not by a narrow prolonged base as in *I. Korolkovi*, *Leichtlinii* and others of the *Oncocycla* group. *Leaves* five to six in a cluster, one foot or more long, and one inch or more broad, more or less falcate, acute, of so remarkably glaucous a grey green colour that the species may thereby be recognized from all others at present in cultivation. *Scape* about one foot high, with a bract or sheathing leaf about half-way up, bearing at the summit two flowers with spathe-valves. *Spathe-valves* two by five-eighths of an inch, pointed, subnavicular, veins obscure, pale green at first, finally colourless and diverging, exposing the ovary. *Tube of perianth* thick, about twice as long as the ovary, red-purple. *Outer segments* cuneate-obovate, obtuse, very recurved; veins brown, or purplish on the claw, purple on the limb; beard long, exceeding the claw, hairs white, tips blue-purple, papillose. *Inner segments* erect, connivent, narrowly cuneate-spathulate, veins thickish and red-brown on the yellow claw, redder on the blade with blue-purple prolongations of a peculiar hue towards the margin. *Anthers* narrow; pollen scanty, blue, fine-grained. *Style* tall, blue-purple.—*M. Foster.*

Figs. 1 and 2, Anthers; 3, top of style and stigmatic surfaces:—*both enlarged.*

M.S. del, J.N. Fitch lith

Vincent Brooks Day & Son lith

L. Reeve & Co. London

Tab. 6903.

STREPTOCARPUS Dunnii.

Native of the Transvaal.

Nat. Ord. Gesneraceæ.—Tribe Cyrtandreæ.

Genus Streptocarpus, *Lindl.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1023.)

Streptocarpus *Dunnii*; molliter glanduloso-pubescens v. tomentosus, folio maximo (2–3-pedali) sessili ovato-oblongo obtuso margine irregulariter lobulato et crenato reticulatim venoso inter venas bullato, costa crassa subtus villosa, scapis perplurimis confertis seriatim evolutis robustis panicolas multifloras secundifloras gerentibus, floribus 1½-pollicaribus pallide lateritio-roseis breviter pedicellatis inclinatis cernuisve, calycis segmentis lineari-oblongis, corolla curva tubuloso-infundibulari puberula, lobis brevibus rotundatis ciliolatis capsula pollicari tomentosa.

Streptocarpus, n. sp., *Masters in Gard. Chron.* vol. xxv. (1886), p. 625.

This magnificent plant, which is quite the monarch of its beautiful genus, belongs to the unifoliate section, along with *S. polyantha*, Hook. (Tab. 4850), *S. Saundersii*, Hook. (Tab. 5251), and several other South African species, in all of which (and as far as is known in all the genus) the only or principal leaf is the growth of one of the cotyledons of the minute embryo. This curious fact was made known almost simultaneously by two independent observers; first in 1859 by Dr. Caspary, as mentioned in the "Botanische Zeitung" for that year (p. 240), and then in 1860 by the late Mr. Crocker, when foreman of the propagating pits at Kew, in the case of *S. polyanthus*, who published an account of it in the Journal of the Linnæan Society (vol. v., p. 65, t. 4, f. 1—8). The development of *Streptocarpus* has also been taken up in Germany, and is treated of in an elaborate paper by Hielscher, in Cohn's "Beitrage" (vol. iii., p. 1, t. 1—3).

Amongst the one-leaved *Streptocarpi* the nearest ally of *S. Dunnii* is *S. Saundersii*, which, like it, has small nearly orbicular anthers, and glabrous filaments; *S. polyanthus*, on the other hand, differs widely in the almost hypocrateriform corolla with long obovate lobes, and especially in the large oblong anthers, which, as well as the filaments,

are hairy. Possibly this great difference in the anthers may be sufficient to establish sectional characters in the genus of more importance than the foliage.

S. Dunnii is a native of Spitzkop, in the mountains of the Transvaal goldfields, at elevations of 3600 to 6000 ft., whence seeds were sent to Kew by Mr. E. G. Dunn, of Oaklands, Claremont, Cape Town, in 1884. From these a profusion of plants have been raised at Kew, which in 1886 formed a conspicuous ornamental border in the Succulent House, flowering in May and June, and fruiting in August. The leaves have attained the extraordinary dimensions of over three feet long, by sixteen inches broad, and are still growing.

DESCR. Base of the very short *stem* as thick as the thumb, villous, as are the young scapes, inflorescence, and midrib beneath, with soft subglandular hairs that turn rufous when dry. *Leaf* solitary, eighteen to thirty-six inches long, sessile, horizontal and decurved, broadly oblong, obtuse, base rounded, contracted or subcordate, margin lobulate and coarsely irregularly crenate, upper surface reticulate and bullate between the nerves, finely pubescent, under surface tomentose, except the very broad villous costa. *Scapes* numerous (six to eight or more), uniseriate from the very base of the leaf, stout, erect, a foot high, bearing much-branched panicles of unilateral glandular-pubescent or tomentose racemes. *Flowers* one and a half inch long or more, at length drooping; pedicels short. *Sepals* one-third of an inch long, linear-oblong. *Corolla* curved, between tubular and funnel-shaped, variable in brightness of tint, pale or bright rose-coloured with a bright red tinge, puberulous externally; lobes rounded, subciliate, two upper smallest. *Stamens* small, included, quite glabrous; filaments rather slender, incurved, contracted near the base; anthers orbicular; rudimentary stamens very minute. *Capsule* one inch long, tomentose; style pubescent.—*J. D. H.*

Fig. 1, Reduced figure of whole plant; 2, plant of the natural size; 3, calyx and style; 4, corolla laid open; 5 and 6, anthers; 7, ovary, disk and pedicel; 8, fruit —*all enlarged.*

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M.S del. J.N.Fitch lith.

Vincent Brooks, Day & Son lith

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Tab. 6904.

KARATAS ACANTHOCRATER.

Native of Brazil.

Nat. Ord. Bromeliaceæ.—Tribe Bromelieæ.

Genus Karatas, *Adans.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 660.)

Karatas (Nidularium) *acanthocrater;* acaulis, foliis 20–30 loratis obtusis cuspidatis patulis rigidulis facie viridibus sæpe maculatis dorso tenuiter lepidotis margine atrobrunneis spinis crebris validis ascendentibus armatis, foliis interioribus brevioribus pulchre purpureo suffusis, floribus pluribus in capitulum globosum centralem aggregatis, bracteis lanceolatis viridibus, ovario cylindrico, calycis segmentis oblongo-lanceolatis cuspidatis, corollæ tubo cylindrico segmentis ovatis cuspidatis falcatis violaceis, staminibus ad corollæ faucem uniseriatis filamentis brevibus antheris oblongis, stylo elongato, stigmatibus spiraliter convolutis.

Nidularium acanthocrater, *Morren in Belg. Hort.* vol. xxxiv. (1884), p. 140, tab. 9.

This new species is one of the finest of the curious Bromeliaceæ with a nest-like habit of growth. In general appearance it closely resembles the three best-known garden species, *N. fulgens*, *N. Meyendorfii*, and *N. Innocentii*, but the colouring of the inner leaves, instead of being red, is purple. There are two varieties, one (*Plutonis*) in which the purple shades off in the direction of red, and the other (*Proserpinæ*) in which it has a bluish tinge. The plant is a native of the forests of South Brazil, and was first sent to Europe by the indefatigable Dr. Glaziou in 1877. It flowered for the first time in the Botanic Garden of Liege in 1881, and a stock was raised and distributed in commerce by M. Jacob-Makoy and Co. shortly after. Our drawing was made from a plant that flowered at Kew in May, 1886. *Nidularium* is a name which is universally used as generic in gardens, but it was reduced to a section of *Karatas* by Mr. Bentham.

Descr. Acaulescent. *Leaves* twenty or thirty, arranged in a dense rosette, spreading, lorate, cuspidate, the outer a foot long, two and a half or three inches broad at the middle, three or four inches at the dilated base, firm in texture, green and often spotted with brown-black on the

face, slightly lepidote on the back, margined with a brown-black line, and furnished with copious large ascending prickles of the same colour. *Inner leaves* reduced in size, and flushed with purple towards the base; innermost small and altogether purple. *Capitulum* dense, many-flowered, sessile in the centre of the rosette of leaves; bracts lanceolate, green. *Ovary* cylindrical; segments of the calyx-limb oblong-lanceolate, cuspidate. *Corolla* a little longer than the calyx-limb; tube cylindrical; segments falcate, ovate cuspidate, bright lilac. *Stamens* arranged in a single row at the throat of the corolla-tube; filaments very short; anthers oblong. *Style* elongated; stigmas spirally twisted.—*J. G. Baker.*

Fig. 1, The whole plant, *much reduced;* 2, a portion of a plant, *life-size;* 3, a single flower, complete, with its subtending bract; 4, portion of corolla, cut open, showing three stamens; 5, summit of style, with stigmas:—*all enlarged.*

M.S.del, J.N.Fitch lith.

Vincent Brooks, Day & Son lith.

TAB. 6905.

ACHILLEA RUPESTRIS.

Native of Southern Italy.

Nat. Ord. COMPOSITÆ.—Tribe ANTHEMIDEÆ.

Genus ACHILLEA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 419.)

ACHILLEA (Montanæ) *rupestris*; humile, laxe cæspitosum, stoloniferum, rhizomate lignoso, caulibus erectis v. ascendentibus glanduloso-puberulis, foliis radicalibus rosulatis lineari-spathulatis obtusis subacutisve integerrimis griseo-viridibus, caulinis sparsis consimilibus interdum basin versus uno latere dentatis capitulis corymbosis $\frac{1}{2}$–$\frac{3}{4}$-poll. latis, involucro late ovoideo, bracteis paucis dorso glandulosis marginibus scariosis fimbriatis, paleis lanceolatis, floribus radii paucis, tubo brevi glanduloso, ligulis rotundatis imbricatis albis 3-crenatis, disci paucis, acheniis rufo-brunneis.

A. rupestris, *Huter in Nuov. Giorn. Bot. Ital.* 1879, p. 281; *Heimerl Monog. Ptarmic.* (1884), p. 38.

The Southern Apennines of Calabria have only recently been examined closely by botanists, and have yielded a considerable number of new or very interesting plants, including some that had previously been supposed to be confined to the mountains of Greece. *Achillea rupestris* is one of these novelties, and a very scarce one, having been collected in one spot only, namely, at Polinello, on the precipitous calcareous rocks of the Pollino Mountains, at an elevation of between 5000 and 6000 feet, where it was discovered by Signors Huter, Porta, and Rigo, in 1877. It is quite hardy in England, and is a very attractive plant for the rock-garden, where it flowered for the first time at Kew in May of the present year.

The Achilleas of the *Ptarmica* section have been made the subject of an elaborate monograph by Anton Heimerl, published by the Royal Academy of Sciences of Vienna, in which twenty-one species are described, together with eighteen hybrids. It is a remarkable fact that though the section *Ptarmica* extends all round the globe in north temperate latitudes, no species is found in the Himalaya or in Tibet.

NOV. 1ST, 1886.

Descr. *Rootstock* much branched, tufted, with many short leafy stolons. *Leaves* on the shoots rosulate, a quarter to half an inch long, linear-spathulate, obtuse or subacute, closely pubescent, greyish green, quite entire; cauline scattered, similar, spreading, the upper sometimes toothed towards the base on one side. *Corymbs* one to one and a half inches in diameter; heads pedicelled, one-half to three-quarters of an inch broad. *Involucre* short, of few, oblong, grey, slightly pubescent bracts, with scarious fimbriate margins. *Paleæ* of the receptable scarious, lanceolate. *Ray-flowers* few, with very short glandular tubes, and large rounded imbricating obtusely three-toothed or -lobed snow-white rays. *Disk-flowers* few. *Achenes* red-brown.—*J. D. H.*

Figs. 1 and 2, Bracts of the involucre; 3, ray-flower; 4, disk-flower; 5, stamens; 6, style of disk-flowers :—*all enlarged.*

M.S. del. J.N. Fitch lith.

Vincent Brooks Day & Son Imp.

L. Reeve & Co. London.

Tab. 6906.

TILLANDSIA chrysostachys.

Native of Peru.

Nat. Ord. Bromeliaceæ.—Tribe Tillandsieæ.

Genus Tillandsia, *Linn.* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 669.)

Tillandsia (Vriesea) *chrysostachys;* acaulis, foliis 20–30 dense rosulatis lanceolatis falcatis viridibus haud lepidotis dorso deorsum brunneo tinctis, pedunculo elongato foliis pluribus reductis rigidulis imbricatis tecto, spicis distichis elongatis simplicibus vel furcatis, bracteis ovatis navicularibus imbricatis citrinis, floribus bracteis æquilongis, sepalis liberis lanceolatis, petalis ligulatis obtusis luteis basi appendiculatis, staminibus petalis brevioribus, stylo elongato, stigmatibus brevibus patulis.

Vriesea chrysostachys, *E. Morren in Belg. Hort.* vol. xxxi. (1881), p. 87.

This beautiful new species of *Vriesea* was introduced into cultivation by Messrs. Veitch in the year 1881. They received it from their collector, Mr. Davis, who discovered it in the forests of the Peruvian Andes. It was described at the time by the late lamented Professor Edward Morren, but has never been figured. The striking point about it is the long yellow spike, in allusion to which the specific name was given, and which remains in good condition for a long time, as the coloration resides mainly in the coriaceous bracts. Our drawing was made from a plant that flowered at Kew in May, 1886.

Descr. Acaulescent. *Leaves* about thirty, arranged in a dense rosette, lanceolate, thin in texture for the Order, entire, a foot or a foot and a half long, two or two and a half inches broad at the middle, bright green on the face, without any bands or spots, paler green on the back, tinged towards the base with claret-brown. *Peduncle* stiffly erect, about a foot long, hidden by the sheathing imbricated ovate adpressed bract-leaves. *Spikes* one or two, distichous, half a foot or a foot long; bracts ovate, navicular, an inch long, imbricated, bright lemon-yellow. *Flowers* not protruded beyond the bracts. *Sepals* free,

lanceolate, half an inch long. *Petals* ligulate, obtuse, bright yellow, an inch long, each appendiculate with a quadrate membranous scale above the base. *Stamens* shorter than the petals. *Pistil* nearly as long as the corolla; style slender, elongated; stigmas short, spreading.—*J. G. Baker.*

Fig. 1, Whole plant, *much reduced;* 2, leaf; 3, spike, both *life-size;* 4, a complete flower; 5, a petal and three stamens; 6, a single anther; 7, complete pistil; 8, stigmas:—*all more or less enlarged.*

M. Bell J.N. Fitch. Lith.

Vincent Brooks Day & Son Imp.

L. Reeve & Co. London.

TAB. 6907.

BRODIÆA DOUGLASII.

Native of California, &c.

Nat. Ord. LILIACEÆ.—Tribe ALLIEÆ.

Genus BRODIÆA, *Smith;* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 880.)

BRODIÆA *Douglasii;* bulbo parvo globoso tunicis exterioribus fibrosis sursum reticulatis, foliis 2 linearibus flaccidis viridibus carinatis scapo brevioribus, scapo gracili tereti, umbellis multifloris, spathæ valvis 2–3 parvis membranaceis brunneis lanceolatis, pedicellis cernuis flore brevioribus, perianthio infundibulari hyacinthino, segmentis oblongis acutis tubo æquilongis, staminibus biseriatis prope tubi faucem insertis antheris oblongis, 3 exterioribus subsessilibus 3 exterioribus filamentis brevibus præditis, pistillo tubo æquilongo, ovario distincte stipitato.

Brodiæa Douglasii, *S. Wats. in Proc. Amer. Acad.* vol. xiv. p. 237; *Bot. Calif.* vol. ii. p. 154.

Triteleia grandiflora, *Lindl. in Bot. Reg.* sub tab. 1293; *Hook. Fl. Bor. Amer.* vol. ii. p. 186, tab. 198 B.

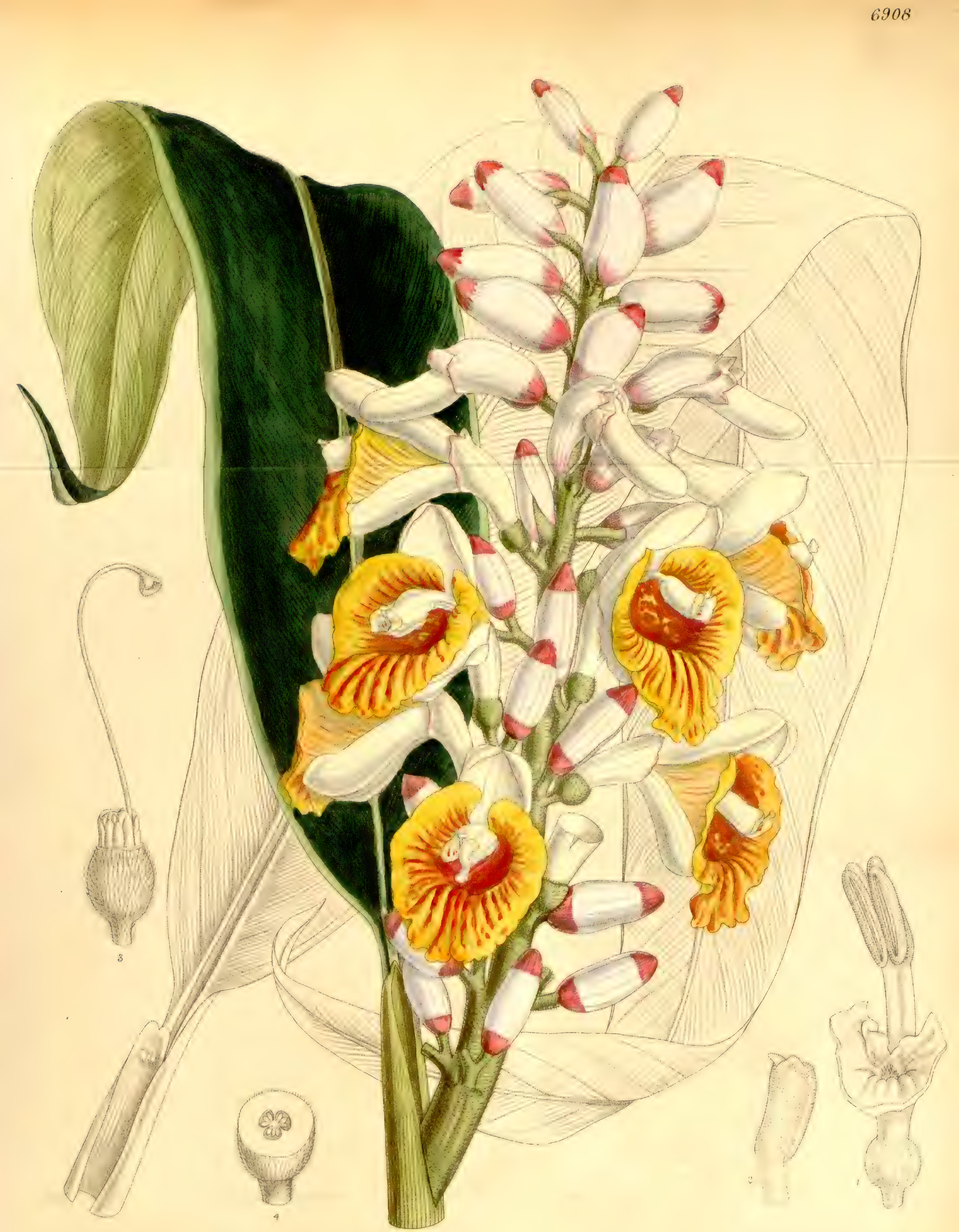
Milla grandiflora, *Baker in Journ. Linn. Soc.* vol. xi. p. 380.

This is one of the finest representatives of the large Western American genus *Brodiæa*. In my monograph in the Journal of the Linnæan Society, just cited, I classified under *Brodiæa* only those species in which three out of the six stamens are suppressed, but Mr. Bentham, following Dr. Sereno Watson, has added to these a large number of closely-related hexamerous species, and as thus understood the genus now includes between thirty and forty species. *Hookera* of Salisbury has a slight priority over *Brodiæa* of Smith. The present plant has a wide distribution through California, Oregon, Washington territory, and British Columbia. It was introduced into cultivation long ago by Douglas, but was soon lost. We had it from Mr. Elwes in 1876. Our drawing was made from a plant that flowered at Kew in May, 1886, the bulb of which came from our enterprising correspondent, Mr. C. G. Pringle, who, after a residence of many years in Vermont, is now busily engaged in exploring the botany of Arizona and the north of Mexico.

NOV. 1ST, 1886.

Descr. *Bulb* small, globose; outer tunics of fine fibres, netted in the upper part. *Leaves* generally two to a bulb, linear, bright green, flaccid, deeply channelled down the face, shorter than the scape. *Scape* slender, terete, a foot or a foot and a half long. *Flowers* ten or twenty, hyacinth-blue, inodorous, arranged in a dense umbel; spathe-valves two or three, small, brown, lanceolate; pedicels cernuous, shorter than the flowers. *Perianth* infundibuliform, an inch long; segments oblong, acute, as long as the tube; three inner rather crisped. *Stamens* biseriate, inserted near the throat of the perianth-tube; three outer subsessile; three inner with short filaments; anthers small, oblong. *Pistil* about as long as the perianth-tube; ovary distinctly stalked.—*J. G. Baker.*

Fig. 1, Bulb, *life-size;* 2, a flower, cut open; 3, anther, front view; 4, anther, back view; 5, pistil:—*all enlarged.*



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M.S. del. J.N. Fitch lith.

L Reeve & Co. London.

Tab. 6908.

ALPINIA MUTICA.

Native of the Malay Islands.

Nat. Ord. Scitamineæ.—Tribe Zingibereæ.

Genus Alpinia, *Linn.* (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 648.)

Alpinia *mutica;* elata, robusta, foliis breviter petiolatis vaginisque glaberrimis oblanceolatisve acuminatis basi acutis lineari-lanceolatis, thyrsis robustis breviter crasse pedunculatis sericeo-tomentosis erectis multifloris, pedicellis brevibus crassis ovariisque subglobosis tomentosis, calyce ¾ poll. longo cylindraceo oblique truncato albo basi apiceque sanguineo, corollæ albæ tubo calyce incluso, segmento postico cucullato obtuso, lateralibus lineari-oblongis, staminodiis lateralibus brevibus, labello amplo late ovato aurantiaco sanguineo-nervoso, filamento crasso, antheræ lineari-oblongæ connectivo crassissimo pubescente apice obtuse 3-dentato, stigmate cupulari piloso.

A. mutica, *Roxb. Fl. Ind. Ed. Carey,* vol. i. p. 65; *Monand. Plants,* t. 47; *Fl. Ind.* (Calcutta Edition) vol. i. p. 67; *Horaninov. Prodr. Monogr. Scitam.* p. 34.

This noble *Alpinia* was introduced into cultivation sixty years ago, but has long since passed into oblivion in so far as European gardens are concerned. It was sent by Dr. Roxburgh from the Calcutta Botanical Gardens, in about 1825, to that of Liverpool, the latter at that time being extraordinarily rich in Scitamineous plants. This was owing to the enlightened patronage of the late Wm. Roscoe, Esq., a wealthy merchant of that city, and the well-known author of the "Life of Lorenzo de Medici." The figure published by Roscoe is a very indifferent one, showing that the plant had not attained maturity; that here given better agrees with Roxburgh's description. According to the latter author, *A. mutica* is a native of the forests of Prince of Wales Island (Penang), whence it was brought to Calcutta by Dr. Roxburgh himself. The plant from which the accompanying drawing was made was presented to Kew by Mr. Bull, and came from Borneo; it flowered in the Palm-house in November, 1882, and again in April, 1886. Roxburgh describes the stems as usually biennial, perishing after the ripening of the seed.

Dec. 1st, 1886.

Descr. *Stems* many, tufted, erect, four to six feet high. *Leaves* bifarious, a foot long by two to three inches broad exclusive of the sheath, quite glabrous, linear-lanceolate, finely acuminate, base acute, bright green above, paler beneath, midrib pale; petiole very short; sheath three to five inches long, striated; ligule short, obtuse. *Panicle* or contracted raceme (thyrse) erect, a foot high by five inches in diameter, densely silkily tomentose; rachis very stout, peduncles and pedicels very short and stout; bracts oblong, caducous. *Flowers* two and a half inches long, drooping. *Calyx-tube* cylindric, slightly curved, obliquely truncate and obscurely lobed, white; before opening it is oblong, with vivid scarlet base and tip. *Petals* white; dorsal large, cucullate, obtuse; lateral linear-oblong, obtuse, concave. *Lip* broadly orbicular-ovate, margin and tips recurved and waved, bright orange-coloured with undefined radiating scarlet streaks. *Staminodes* short, lobed. *Filament* stout, white; anther pubescent, cells very narrow; connective very thick, tip truncate, obtusely lobed. *Ovary* globose, villous, green.—*J. D. H.*

Fig. 1, Flower, with the perianth removed; 2, anther; 3, ovary and staminodes; 4, transverse section of ovary:—*all enlarged.*

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M.S. del. J.N. Fitch lith.

Vincent Brooks Day & Son imp.

L. Reeve & Co. London.

Tab. 6909.

ARISTOLOCHIA ELEGANS.

Native of Brazil.

Nat. Ord. Aristolochiaceæ.

Genus Aristolochia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 123.)

Aristolochia (Gymnolobus) *elegans;* suffruticosa, scandens, glaberrima, ramis gracillimis, foliis longe petiolatis membranaceis reniformi-cordatis obtusis 5–7-nerviis, subtus glaucescentibus, stipulis falcato-oblongis -orbiculatisve, floribus solitariis longe pedicellatis pendulis, perianthii tubo oblongo inflato abrupte in limbum refractum desinente limbo breviter infundibulari dein expanso concavo ambitu suborbiculato hinc cordato extus albo purpureo venoso, intus purpureo albo reticulato circa orem parvum velutino, fauce luteo-viridi, styli lobis 6 brevibus erectis obtusis, antheris 6 loculis angustis.

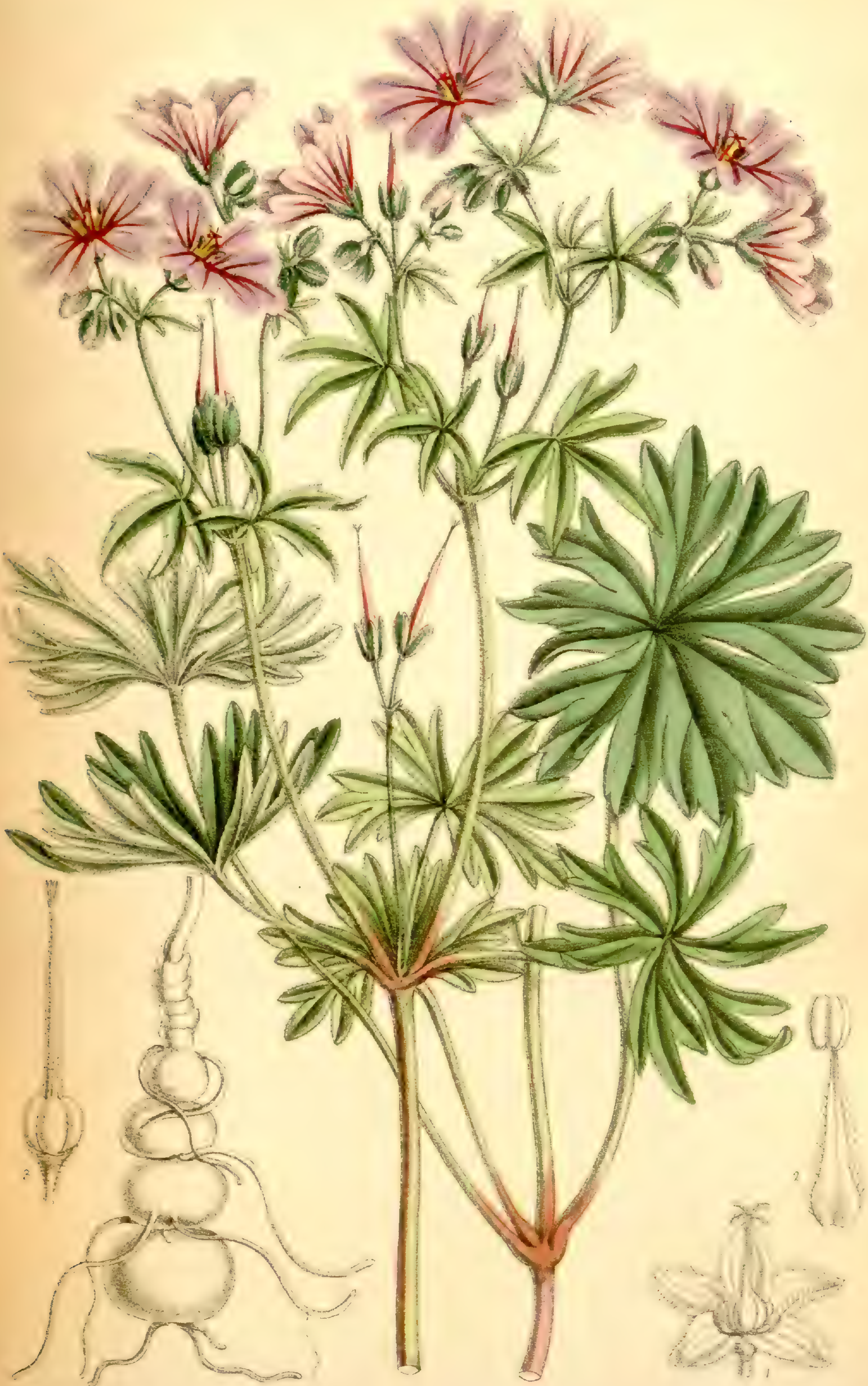
A. elegans, *Masters in Gard. Chron.* N. S. xxiv. (1855), p. 301, f. 64.

This, as Dr. Masters observes, is nearly allied to *A. Ruiziana*, Duchartre (*A. Duchartrei*, André, Tab. nostr. 5880), which, however, differs notably in the racemose inflorescence, and in the much longer tube of the limb of the corolla. *A. elegans* is much the most graceful plant of the two, and indeed well deserves its name. It is a native of Rio de Janeiro, in Brazil, whence Herbarium specimens have been sent to Kew by the Superintendent of Public Parks and Plantations, the indefatigable Senr. Glaziou; but our living specimen was received from Dr. Capanema, of Rio. Mr. Bull has also introduced it into cultivation, and the specimen figured in the "Gardener's Chronicle" is from his establishment. Our specimen flowered in a tropical house at Kew in August of the present year. There are in the Kew Herbarium specimens of apparently the same species from the Parana River in 26°–27° S. latitude, communicated by D. Parodi in 1883. Possibly the species is only cultivated at Rio.

Descr. A very slender glabrous climber, with pendulous filiform flowering branches. *Leaves* long-petioled, two to three inches long and broad, membranous, broadly reniformly cordate with large open sinus and rounded basal lobes, sides sometimes contracted, tip rounded or obtuse,

upper surface bright green, under glaucescent; nerves five to seven pair radiating from the tip of the petiole, slender, reticulating; petiole one to two and a half inches long, very slender; stipules falcately reniform or almost orbicular, with an oblique base. *Flowers* solitary, long-pedicelled, together with the pedicel two to three inches long; ovary very slender. *Perianth-tube* (or sack) one and a half inches long, oblong, rather inflated, pale yellow-green; limb suddenly expanding from a very short funnel-shaped base into a nearly circular shallow cup, cordate at the base and three inches in diameter; externally white reticulated with undefined red purple veins; internally the limb is deep rich purple brown; it is velvety towards the centre, and whitish towards the circumference, where the purple is irrorated with white; mouth yellow-green. *Stylar column* short, cylindric, but expanded upwards into six oblong obtuse teeth. *Anthers* six; cells very narrow.—*J. D. H.*

Fig. 1, Top of ovary and stylar column; 2, column:—*both magnified.*



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TAB. 6910.

GERANIUM TUBEROSUM, *var.* CHARLESII.

Native of Affghanistan.

Nat. Ord. GERANIACEÆ.—Tribe GERANIEÆ.

Genus GERANIUM, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 272.)

GERANIUM *tuberosum*; plus minus pubescens v. hirsutum, rhizomate tuberoso, caulibus erectis superne pluries et divaricatim 2–3-chotomis, foliis ambitu suborbiculatis 5–9-partitis, segmentis lanceolatis, radicalibus longe petiolatis, floralibus sessilibus, pedunculis 1–2-floris fructiferis erectis, sepalis hirtis ovatis abrupte mucronatis, petalis obcordatis calyce duplo longioribus, valvulis hirtis.

G. tuberosum, *Linn.*;—*Boiss. Fl. Orient.* vol. i. p. 873.

VAR. Charlesii, *Aitchison and Hemsley mss.*; rhizomatibus superpositis, foliorum segmentis integrioribus.

This is one of the difficult cases that often present themselves to a systematist, of determining whether a divergent form of a species obtained from the extreme limits of the geographical area of that species should be entitled to specific rank. The subject of the present plate is from Affghanistan; and the type of *Geranium* to which it belongs (*G. tuberosum*) extends from the Mediterranean region and North Africa to Persia, but had not hitherto been found anywhere to the eastward of that region; and here we have from beyond its known limits a plant differing from *tuberosum* only in the less laterally lobed segments of the leaf, and its superposed rhizomes. In such a case as this the variability of the type must be taken into account; and as Boissier, who knew *G. tuberosum* better than any one, says of it that it is very variable as to foliage, the conclusion adopted by Aitchison and Hemsley is no doubt the right one. A more remarkable character than the foliage is the superposed subterranean rhizomes, as shown in our plate and in all Dr. Aitchison's specimens; in the type plant they seem to be almost invariably solitary.

Var. Charlesii was raised from tubers sent to Kew by Dr. Aitchison when on the Affghan Boundary Commission,

and he desires that it should bear the name of Dr. Charles, the medical officer in charge of the Field Hospital of the Commission. It was found commonly in crevices of limestone rocks at an altitude of 3000 feet on the north and eastern sides of the Kambno Pass, Badghis, in May, 1885, and it flowered in Kew in the same month of the following year. Boissier describes the flowers of *G. tuberosum* as violet-coloured, which is hardly the case.

Descr. A perennial, up to eighteen inches high, usually four to six. *Stems* of the larger forms weak and spreading, of the smaller stiff and erect. *Rootstock* of numerous superposed tubers, the lowest usually the largest and as large as a cherry. *Radical leaves* none; lowest cauline long petioled, upper shorter petioled, uppermost (floral) sessile, segments cut chiefly at the tip, more rarely at the sides. *Flowers* rose-coloured, varying in size one-half to one inch, the petals enlarging till they fall off (*Aitchison and Hemsley mss.*).—*J. D. H.*

Fig. 1, Flower with the petals removed (the spurs at the tips of the sepals omitted); 2, stamen; 3, ovary:—*all enlarged.*

M S. del. J.N.Fitch lith.

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Tab. 6911.

CARPENTERIA californica.

Native of California.

Nat. Ord. Saxifrageæ.—Tribe Hydrangeæ.

Genus Carpenteria, *Torr.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 643.)

Carpenteria *californica;* frutex subglabra, cortice albo, foliis oppositis subsessilibus oblongo-lanceolatis obtusis v. subacutis subtus appresse albo-tomentillis integerrimis v. remote obscure dentatis, basi acutis, floribus in axillis superioribus subcorymbosis pedicellatis amplis albis, sepalis ovato-lanceolatis, petalis orbicularibus, staminibus perplurimis perigynis, ovario 5–6-loculari basi lata calyce immerso late ovoideo in stylum brevem attenuato, stigmatibus 5–6 reflexis, capsula septicide 5–6-loculari.

C. californica, *Torrey Plant. Fremont.* vol. vi. p. 12, t. 7; *Kellog in Proc. Californ. Acad.* vol. vii. p. 110; *S. Wats. Bot. Calif.* vol. i. p. 203; *Revue Horticole,* 1884, p. 365; *Masters in Gard. Chron.* N. S. vol. xxvi. (1886) p. 115, fig. 22.

It is singular that the exact native country of so fine a shrub as *Carpenteria* should be doubtful. Torrey, the author of the genus, said of it in 1850, Sierra Nevada of California, probably on the head waters of the St. Joachin, a statement repeated by all subsequent authors, and even up to the latest by the "Gardener's Chronicle," published in the present year. The only native specimens in the Kew Herbarium are those collected by Fremont in one of his Californian expeditions, but whether of 1843, 1845, or 1848 is not stated. In all these expeditions Col. Fremont collected largely, but a large proportion of the results have been lost. Thus of his second expedition (1844), which embraced extensive regions of Oregon and California, a mule loaded with botanical specimens procured along a thousand miles of travel, fell from a precipice into a deep gorge and could not be recovered, and a large part of the remainder of his herbarium was destroyed by a flood in crossing the Kansas River. Again, Torrey tells us that in his third expedition, a very hazardous one, notwithstanding every precaution, some valuable packages were destroyed through the numerous and unavoidable mishaps of such an adventurous journey.

Dec. 1st, 1886.

Carpenteria is closely allied to *Philadelphus*, differing in the almost superior ovary, and solitary style. It was named after Professor Carpenter of Louisiana, an assiduous local botanist. It was introduced into Europe by our friend Max Leichtlin, of Baden Baden; and for the specimen here figured I am indebted to Miss Jekyll, of Munstead, near Godalming, in whose rich gardens, at an elevation of 400 ft. above the sea, it withstood the cold of last winter in the open air and unprotected, without a leaf being injured. In a cool greenhouse Miss Jekyll has a plant seven feet high which flowers in July.

Descr. A shrub six feet high, with opposite branches and leaves, the former clothed with a white bark, the outer layers of which are removable. *Leaves* two to four inches long, lanceolate or elliptic-lanceolate, obtuse or subacute, quite entire or minutely toothed, base acute, upper surface bright green, under clothed with appressed white tomentum. *Flowers* odorous, terminating axillary branches, together forming a loose panicle, two to three inches in diameter, pure white. *Calyx-tube* very short; segments ovate-lanceolate, acuminate. *Petals* orbicular, concave, notched, hardly clawed. *Stamens* perigynous, very numerous, shorter than the petals, filaments slender, suddenly dilated at the very base, anthers small. *Ovary* five- to seven-celled, broadly bottle-shaped, its base sunk in the calyx-tube, contracted into a short stout style with five to six reflexed linear stigmas grooved down the middle. *Ovules* very numerous, on bifid placentas projecting from the inner angles of the cells. *Fruit* membranous, epicarp separable, septicidally five-valved. *Seeds* minute, oblong, testa produced into an obtuse appendage.—*J. D. H.*

Fig. 1, Flower with the petals removed; 2, bundle of stamens; 3, stamens; 4, ovary; 5, transverse section of ditto:—*all enlarged.*

M.S del, J.N.Fitch lith.

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TAB. 6912.

ASTER STRACHEYI.

Native of the Western Himalaya.

Nat. Ord. COMPOSITEÆ.—Tribe ASTEROIDEÆ.

Genus ASTER, *Linn;* (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 271.)

ASTER *Stracheyi;* humilis, hirsuto-pubescens, subacaulis, stolonifera, foliis radicalibus rosulatis oblanceolato-spathulatis integerrimis v. dentatis paucinerviis, stolonibus elongatis prostratis apicibus adscendentibus sparsim foliatis, foliis parvis sessilibus obovato-spathulatis, scapis pedunculisve adscendentibus gracilibus pauci-bracteatis rufo-brunneis monocephalis, capitulis parvis, involucri campanulati bracteis oblongo-lanceolatis fimbriato-ciliatis rufo-brunneis medio viridibus, ligulis numerosis 1-seriatis pallide cæruleo-lilacinis, floribus disci paucis, pappo sordide albo v. rufescente, acheniis compressis oblanceolato-cuneatis sericeis.

A. Stracheyi, *Hook. fil. Flora of British India*, vol. iii. p. 250.

Heterochæta, No. 2, *Strachey and Winterbottom, Himal. Herb.*

The species of *Aster* and *Erigeron* are amongst the greatest ornaments of the grassy and rocky pastures of the loftiest Himalaya, where, however, they form groups of species most puzzling for the botanist to distinguish and describe; and indeed, with regard to some of them, it is difficult to decide to which of the above-named genera they should be referred. Fortunately *A. Stracheyi* is one of those that can least be confounded with any other; its small size, copious stolons, slender one-flowered scapes, and small heads are easily recognized characters. It is apparently a very local species, and has hitherto been found only in the provinces of Garwhal and Kumaon (west of Nepal). Wallich first procured it, probably from Dr. Govan, the earliest botanical explorer of that region. Some thirty years afterwards, Madden, Strachey, and Winterbottom all found it at the Pindari Glaucier, alt. 12,500 feet; and still more lately it has been found on the Bamsor Pass, in Garwhal, at an elevation of 15,000 to 16,000 feet, by Mr. Duthie, Superintendent of the Saharunpore Botanical Gardens.

The specimen figured was received from the Saharunpore

Botanical Gardens in 1885, and flowered in May of the present year.

DESCR. Whole plant more or less hispid or hirsute. *Rootstock* rather stout, simple or branched, giving off tufts of rosulate leaves, numerous long slender stolons which are prostrate or pendulous over rocks, and many ascending usually slender one-flowered scapes. *Radical leaves* one to one and a half inches long, shortly petioled, oblanceolate or obovate, acute or subacute, entire or more or less toothed, pale green above, paler beneath with two or three pairs of ascending nerves; leaves on the stolons much smaller and more sessile, those on the scapes few and linear or linear-obovate. *Scapes* rich dark brown, two to five inches high, with spreading hairs. *Heads* three-quarters to one and a quarter of an inch in diameter. *Involucre* campanulate; bracts in about two series, red brown, with green backs, oblong or oblong-lanceolate, acute or subacute, nearly glabrous except at the subfimbriate margins. *Ray-flowers* in one series, pale lilac blue, linear, tips minutely notched. *Disk-flowers* few, yellow, not forming a compact mass. *Achenes* narrowly obovate, compressed with an obtuse ridge on the face, silky; pappus rather longer than the achene, rigid, dirty reddish.—*J. D. H.*

Fig. 1, Bracts of the involucre; 2, ray-flower; 3, disk-flower; 4, stigmatic arms of ditto; 5, achene of ray, and 6, of disk:—*all enlarged.*

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